DOCUMENT RESUME

ED 047 177 AA 000 670

TITLE Midterm Report #3, Volume III. Fort Lincoln New Town Education System.
INSTITUTION General Learning Corp., Washington, D.C.
SPONS AGENCY District of Columbia Public Schools, Washington, D.C.
PUB DATE 7 Oct 69
NOTE 215p.

EDRS PRICE EDRS Price MF-$0.65 HC-$9.87
DESCRIPTORS *Building Equipment, Classroom Furniture, Educational Facilities, Equipment, *Facility Requirements, *Financial Support, Interior Design, *Open Plan Schools, Task Performance, *Urban Renewal
IDENTIFIERS *Fort Lincoln New Town (FLNT)

ABSTRACT

Volume III of the Midterm Report for the Fort Lincoln New Town (FLNT) education system is a revision of some of the preliminary specifications and is addressed to the teachers, administrators, students, and community residents who will be using the facility. Three additional plans of the "Open Plan" for the FLNT First Facility are included. The first Facilities Plan, describes the interior features, furniture, equipment, and lists the suppliers. The second, Funding Plan, discusses budget estimates in a program format and the third, Implementation Plan, defines the tasks to be performed and the schedule to be maintained to open the First Facility. (For related documents see ED 047 171 through ED 047 188.) (LS)

ED 047 177

GENERAL LEARNING CORPORATION
EDUCATIONAL SERVICES DIVISION

AA 000 670

2

GENERAL LEARNING CORPORATION
FORT LINCOLN NEW TOWN

MIDTERM REPORT
VOLUME III

NEGOTIATED SERVICES
CONTRACT # 69183

REPORT #3

OCTOBER 7, 1969

GENERAL LEARNING CORPORATION • EDUCATIONAL SERVICES DIVISION
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PREFACE

This report is a description of the OPEN PLAN for the Fort Lincoln New Town Education System. It describes the steps that must be taken between now and the opening of the First Facility as well as the processes involved in implementing and conducting the high quality education system mandated by the District of Columbia School System.

The OPEN PLAN actually consists of seven separate plans. They are described in three separate volumes:

Volume I	1. Education Plan
Volume II	2. Organization/Staffing Plan 3. Operations Plan 4. Community Participation Plan
Volume III	5. Facilities Plan 6. Funding Plan 7. Implementation Plan

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5. FACILITIES PLAN

5.1 Introduction

The design for the Fort Lincoln First Facility to accommodate a capacity of 700 students aged 3 through 12 has been completed and contractors will start construction within several weeks. A document containing preliminary facility specifications was published in April 1969 to provide the architect with information describing a "new and relevant system of education" for the new town. This document is a revision of some of the preliminary specifications. It is addressed to the teachers, administrators, students, and community residents who will be using the facility.

The First Facility was designed by Louis B. Fry, of Fry and Welch Architects, as a building which not only can be physically changed, but one in which such change is expected. The interior of this building is made up of components which can be erected and altered by any adult. Many features can be manipulated by the students, and some can be changed by the smallest child. It is a structure which will not be complete until the staff has positioned the interior partitions during the implementation of the Education Plan. The facility is a tool, in the same way that a movie projector or blackboard is a tool, to be used by the participants to mold a program, to activate young minds, to encourage insights into the organization of space and to make the environment an active element in education.

When one thinks of the traditional means of using a classroom or changing the learning environment, one thinks of diligent teachers decorating a first-grade room with orange paper pumpkins pasted on the windows or mounted symbols of the alphabet. The letters are likely to be displayed in sequence, with the small letter following the capital letter, placed above the blackboards around the room.

In contrast, the manipulation of the environment in a much larger sense is encouraged in the First Facility. A teacher or group of teachers can remove a wall, turn off most of the lights in a zone to form a dramatic area, apply graphics to large boards or suspend them from the ceiling, alter the size of a room to accommodate a particular number of students, write or paint with watercolor on any surface from floor to ceiling, and change the configuration of movable storage units to form a huge open space. Because the whole building is flexible, easily programmed, and changeable as a lesson in mathematics, a new approach to education is permitted.

This section is a "recipe book" for generating creative environments; it is a manual that can be used to learn about the working parts and how to use them; it is an idea book to stimulate new ways to group people or place them in clusters; and it is a lesson plan to document the architectural design so that the facility may become an active part of the learning experience.

In Section 5.2, aspects of the interior design such as the architectural plan and organization of the facility, the flexible partitioning systems, and grouping and organizational possibilities for the space will be discussed. Section 5.3 includes a description of graphic considerations within the facility,and in Section 5.4 the materials and equipment suited for open space schools are discussed.

Section 5.5 deals with exterior facilities. For example, ecology, the study of the evolving environment, can enrich the curriculum for children in

Stage I and II. Such a program can be enhanced immensely with a responsive use of the soil and landscaping layout surrounding the school site.

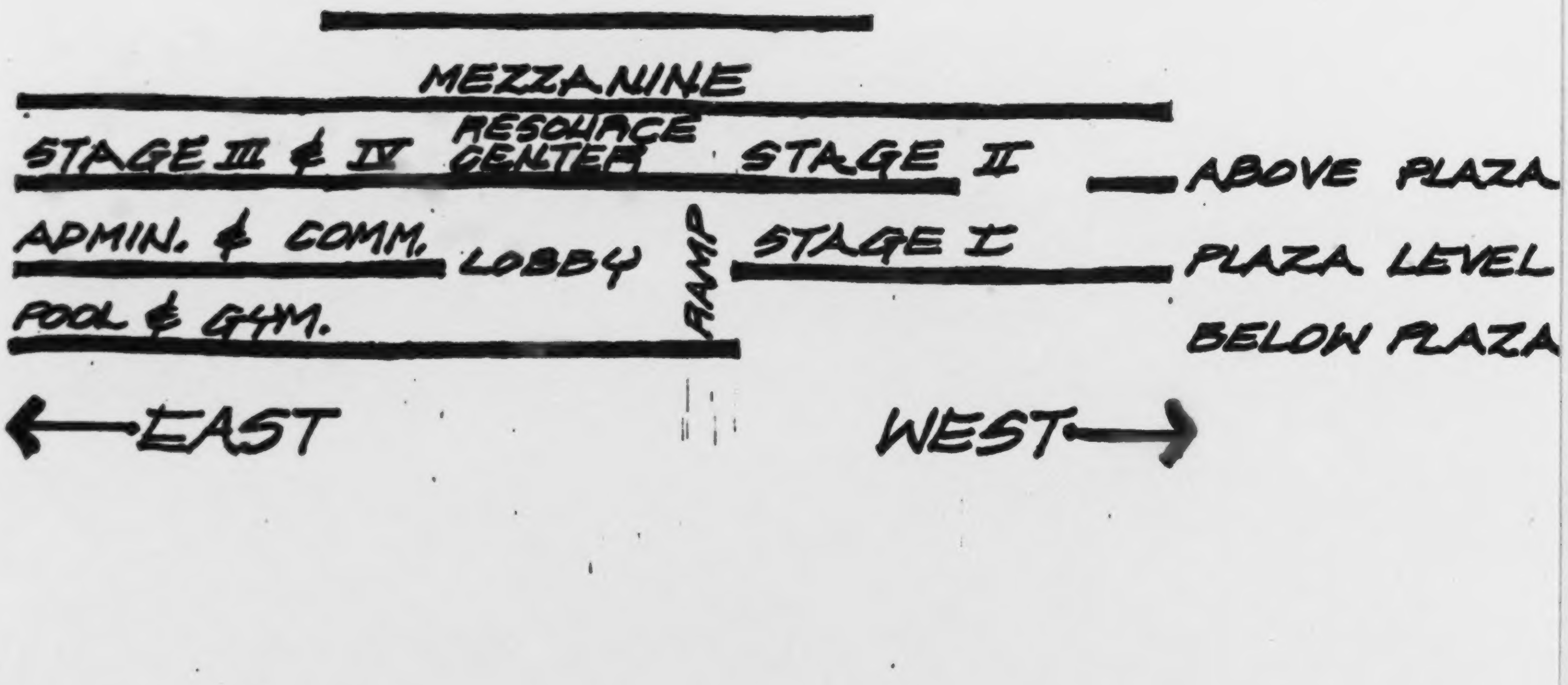
Section 5.6 includes recommendations with respect to problems of implementation. If continuity and quality are to be maintained throughout the design, construction,and initial occupancy of this facility, then the parts which make up the whole must be monitored and adjusted to ensure a creative resolution. The initial planning concepts must be maintained throughout the construction process and throughout the life of the building.

5.2 Interior Design

The plans for the First Facility include community services areas, recreational areas, and educational space for 700 children aged 3 through 12.

The facility's design will be described starting with the bottom floor (the Below Plaza Level) and working up through the Plaza Level, Above Plaza Level, and Mezzanine. The different uses to be made of the spaces on each level will be described.

SCHEMATIC SECTION
(LOOKING SOUTH)


MEZZANINE
STAGE III & IV
RESOURCE CENTER
STAGE II
ABOVE PLAZA
ADMIN. & COMM.
LOBBY
RAMP
STAGE I
PLAZA LEVEL
POOL & GYM.
BELOW PLAZA
EAST
WEST

5.2.1 Level Below Plaza, East and West

The building is located on a hill, and an entrance to the lower lobby in the center of the building provides major access to the facility from the North. This lobby, which is near the kitchen and the outside eating area, can be used as a decentralized dining area. Since it is also near the pool, swimmers can eat in the area when the pool is in use.

This level has access to the swimming pool and to the floor of the gym and auditorium. Spectators will use bleachers and galleries on the Plaza Level for observing games and activities. There are public toilets and telephones in the concourse which connects the lobby with the pool and the auditorium.

- Swimming Pool

  There is an Olympic-size pool with a training pool on one side. Lockers for both the school population and the community adjoin the swimming area. An outside pool deck, to be used in warm weather, may be reached through sliding glass doors.

- Gymnasium - Auditorium

  The gym is to be used primarily for the physical education program and community programs. A portable stage with an extensive lighting system may be set up. The seating capacity, including built-in bleachers on the Plaza Level and folding chairs on the auditorium floor, is 500 - 600 persons.

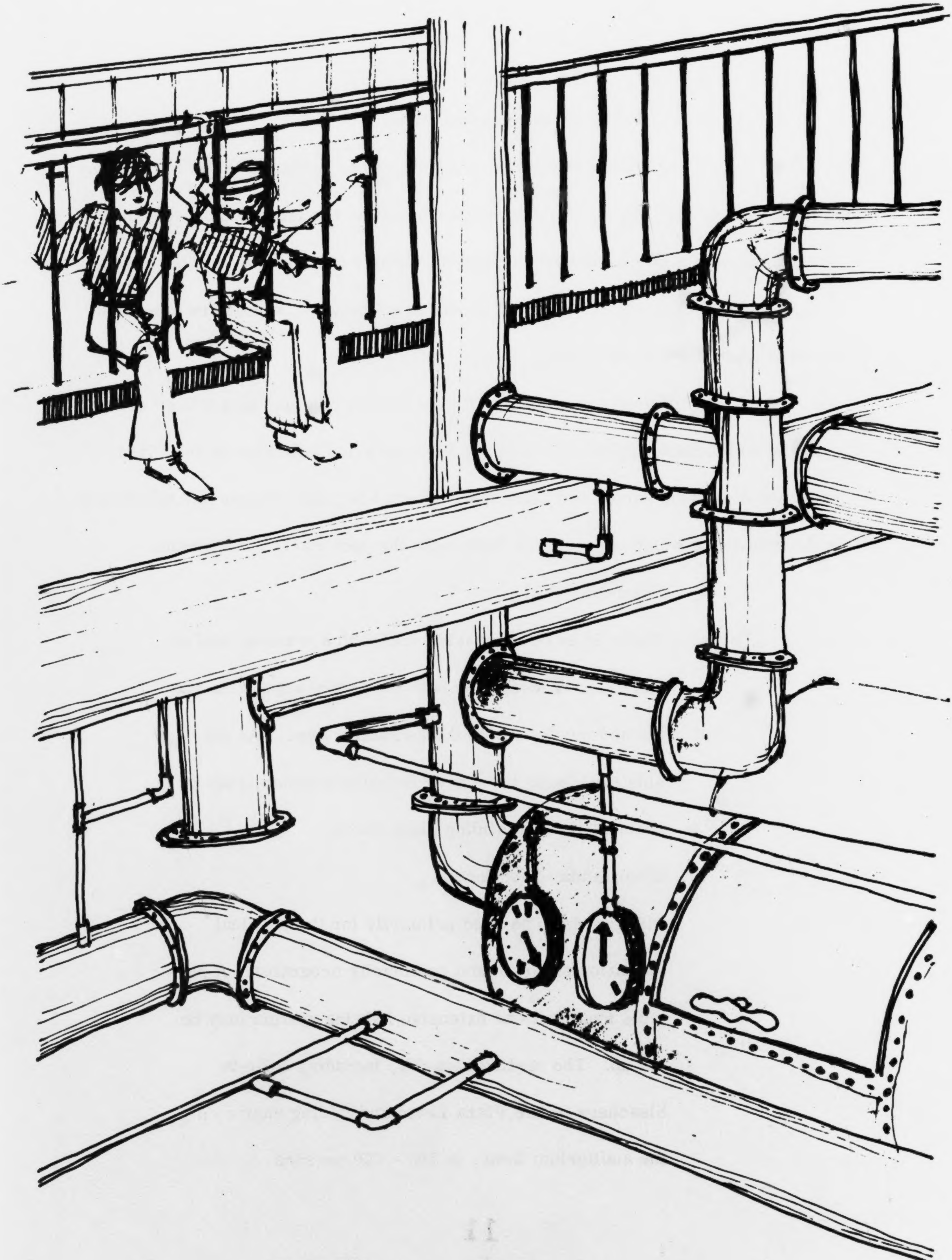


Figure 5-1.

- **Kitchen-Boiler Room - Custodians Office**

  Traditionally these areas are considered off limits to teachers and students, yet they contain some of the most fascinating equipment and signaling systems in the school. Therefore, in this facility, these areas will be used by the children, either for group activities or for individual research projects.

PLAZA LEVEL

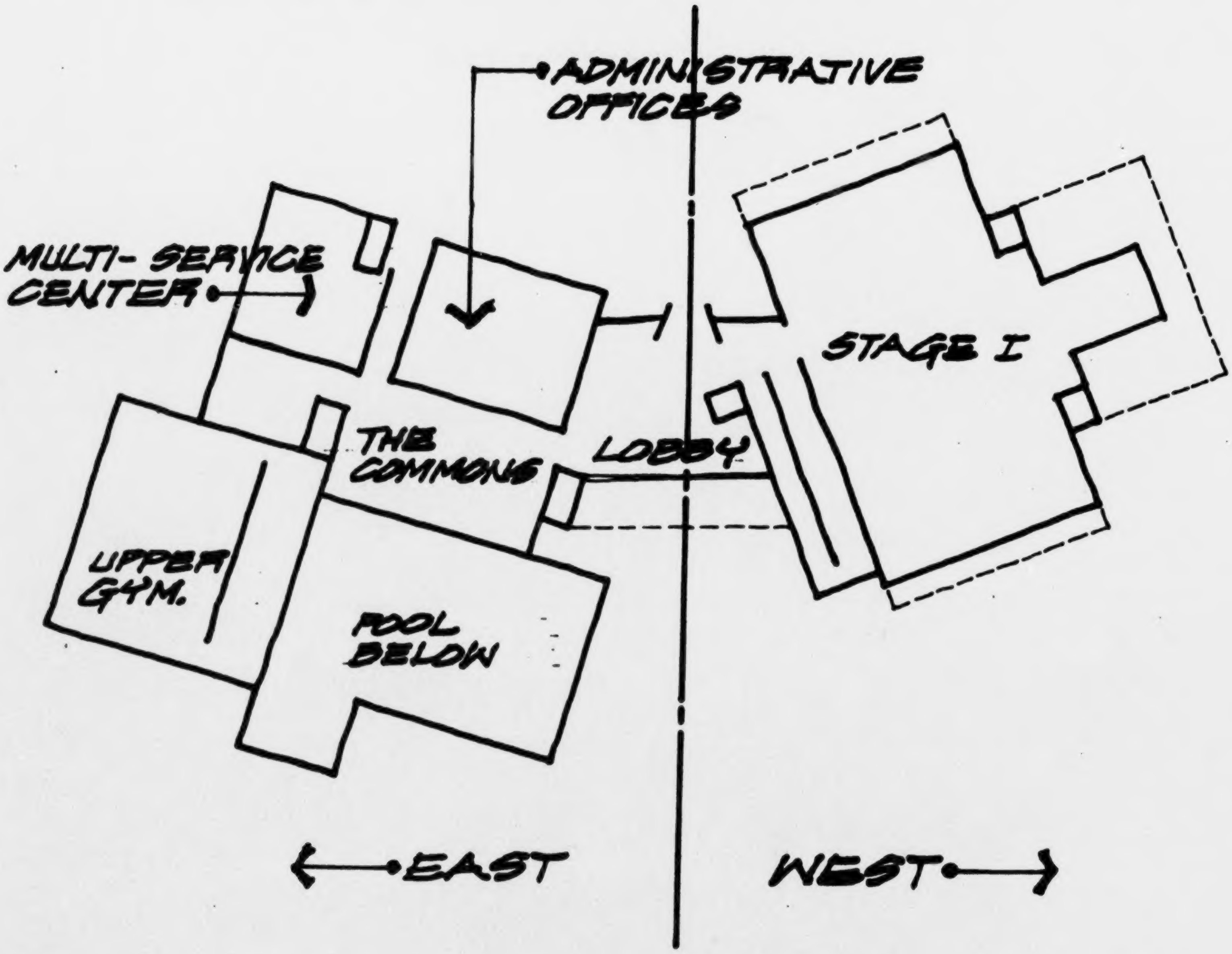

ADMINISTRATIVE OFFICES
MULTI-SERVICE CENTER
STAGE I
THE COMMONS
LOBBY
UPPER GYM.
POOL BELOW
EAST
WEST

Figure 5-2.

5.2.2 Plaza Level, East and West

Stage I will be located on this level of the facility. It will be in the Western section, with community services, administrative services, and public areas in the Eastern section. All these areas are accessible to the town center on the South.

- Lobby

  The Plaza Level lobby, located directly above and overlooking the Level Below Plaza lobby, serves as the main entrance to the facility. It will be used as an orientation area for large groups of visitors and a decentralized snack area for the entire school population.

- Multiservice Center

  The community will need a variety of spaces for medical and social services. The large, open area in the east wing will be divided with demountable partitions as the services are defined.

- Administrative Offices

  Offices for the central administration should be almost indistinguishable from the community areas. These offices will act as a buffer and an information center for the operations taking place.

- **The Commons**

  This space is designed as a multipurpose room for audiovisual and dramatic presentations, exhibitions, and meetings. It contains a "cyclorama" for wide movie projection, chalkboards, projection screens, adjustable lighting and other audiovisual equipment. The area can be used for exhibits, banquets, movie screening and other uses to be identified by the teachers and school population.

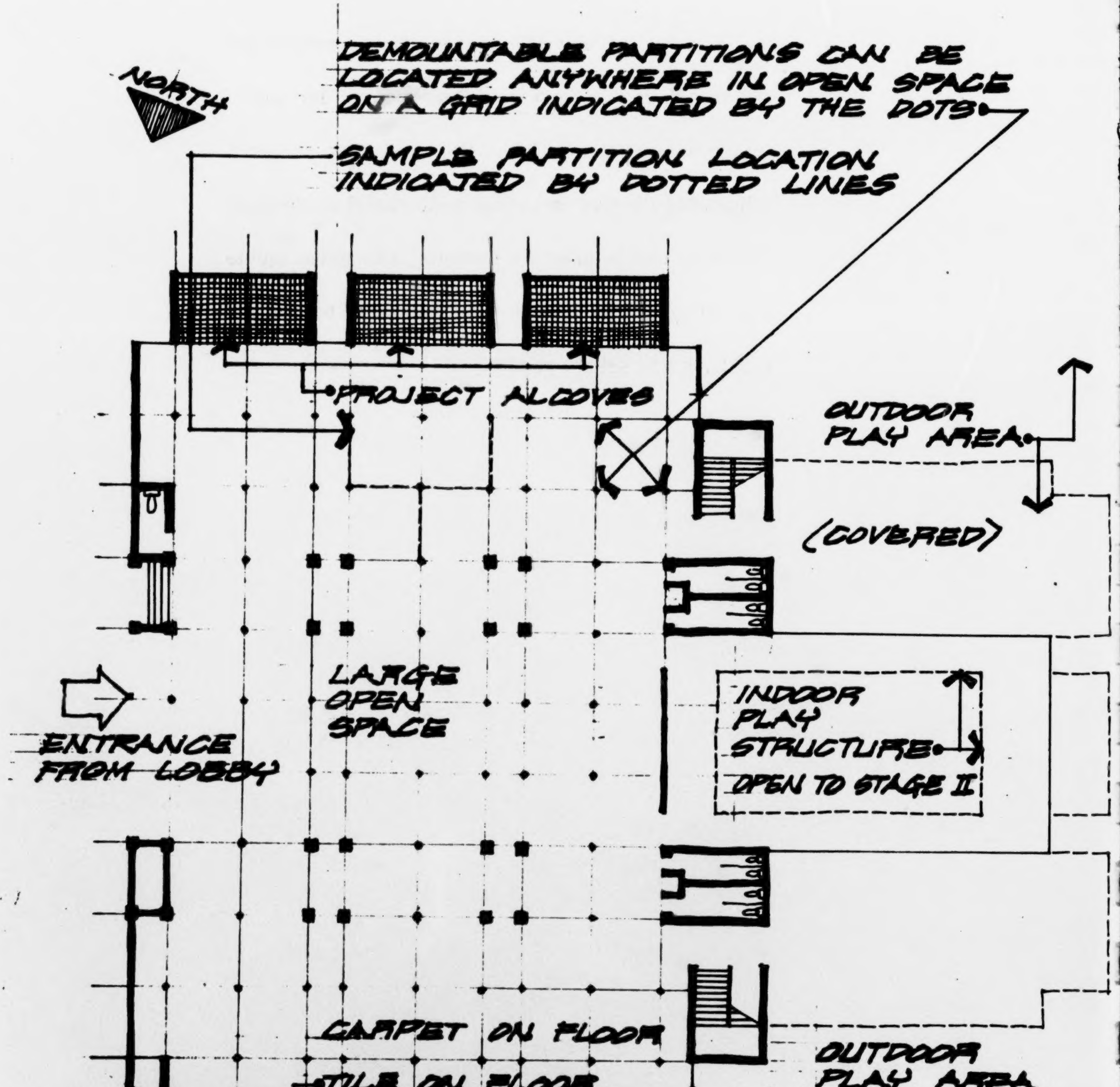

NORTH
DEMOUNTABLE PARTITIONS CAN BE LOCATED ANYWHERE IN OPEN SPACE ON A GRID INDICATED BY THE DOTS
SAMPLE PARTITION LOCATION INDICATED BY DOTTED LINES
PROJECT ALCOVES
OUTDOOR PLAY AREA
(COVERED)
LARGE OPEN SPACE
ENTRANCE FROM LOBBY
INDOOR PLAY STRUCTURE
OPEN TO STAGE II
CARPET ON FLOOR
TILE ON FLOOR
OUTDOOR PLAY AREA
STAGE ONE

Figure 5-3.

5.2.3 Plaza Level West — Stage I

This area will serve 175 children aged 3 - 5.

5.2.3.1 General Educational Characteristics

Teachers, parents and paraprofessionals as well as older students will provide direction and guidance consistent with the individual child's capacity to respond and with his attention span to the Stage I children.

The youngsters will be encouraged to move about the area freely to allow a high level of physical activity and a variety of educational experiences. Students will be engaged in activities bringing immediate gratification (i.e., if a child wants to build blocks, he can sit down and do so at once). The space will also include protected areas similar to "home" where the students can retreat and feel safe.

The child must come away from his early educational experiences with enthusiasm. In exploring formal instructional materials, he should reinforce his natural interests and develop a positive attitude toward both school and himself.

5.2.3.2 General Environmental Characteristics

A large open space, which can be altered and manipulated at will by its inhabitants as they discover new ways to use the environment, is designed for Stage I activities. The area itself is an educational tool. This space, approximately 100' x 150', is punctuated on the periphery by special areas for activities unique to small children. There are project alcoves (with water available) which can be used for special purposes such as water play, planting, etc. A play structure vertically connecting Stage I to Stage II is designed to encourage kinesthetic exploration as well as provide a rich variety of places for dramatic productions, role playing or small group meetings. Adjacent to this structure are two outdoor play areas intended primarily for this age group.

- **Large Open Area**

This area is equivalent in size to six large classrooms including supporting rooms for teacher work space, storage,and eating facilities. The use of this space should involve the following activities:

For Facility and Community:

- Work space for planning, discussions, and counseling
- Teacher/parent planning spaces
- Lounge for adults with and without children
- Telephone stations for making appointments, calling parents, etc.
- Community education programs
- Resource and storage area for individual lesson plans, educational material, toys not in use, etc.

For Students:

- Quiet reading spaces for individuals and small groups
- Tables for project work in art, etc. and for snacks and lunch
- Block play areas
- Dress-up and dramatic areas
- Lockers and "cubbies" for garments and personal belongings
- Storage and display for current games and activity packages

Within this space, floor-to-ceiling partitions can be set up anywhere on a 10' x 10' grid pattern; rolling teacher wardrobes and high storage units can be resituated easily, and low storage units can further define the space as needed. A majority of activities will take place on the carpeted floor. (The furnishings,

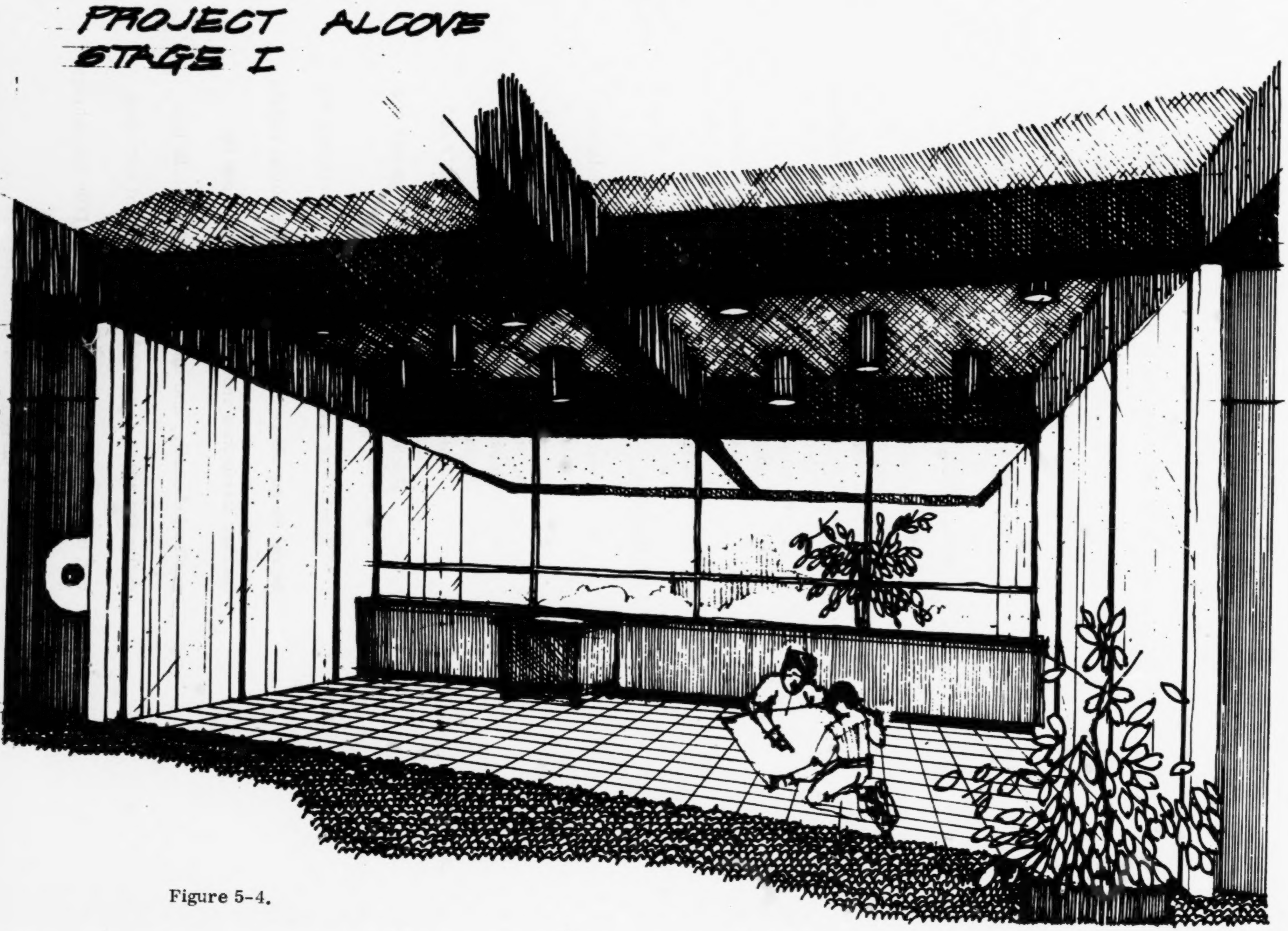
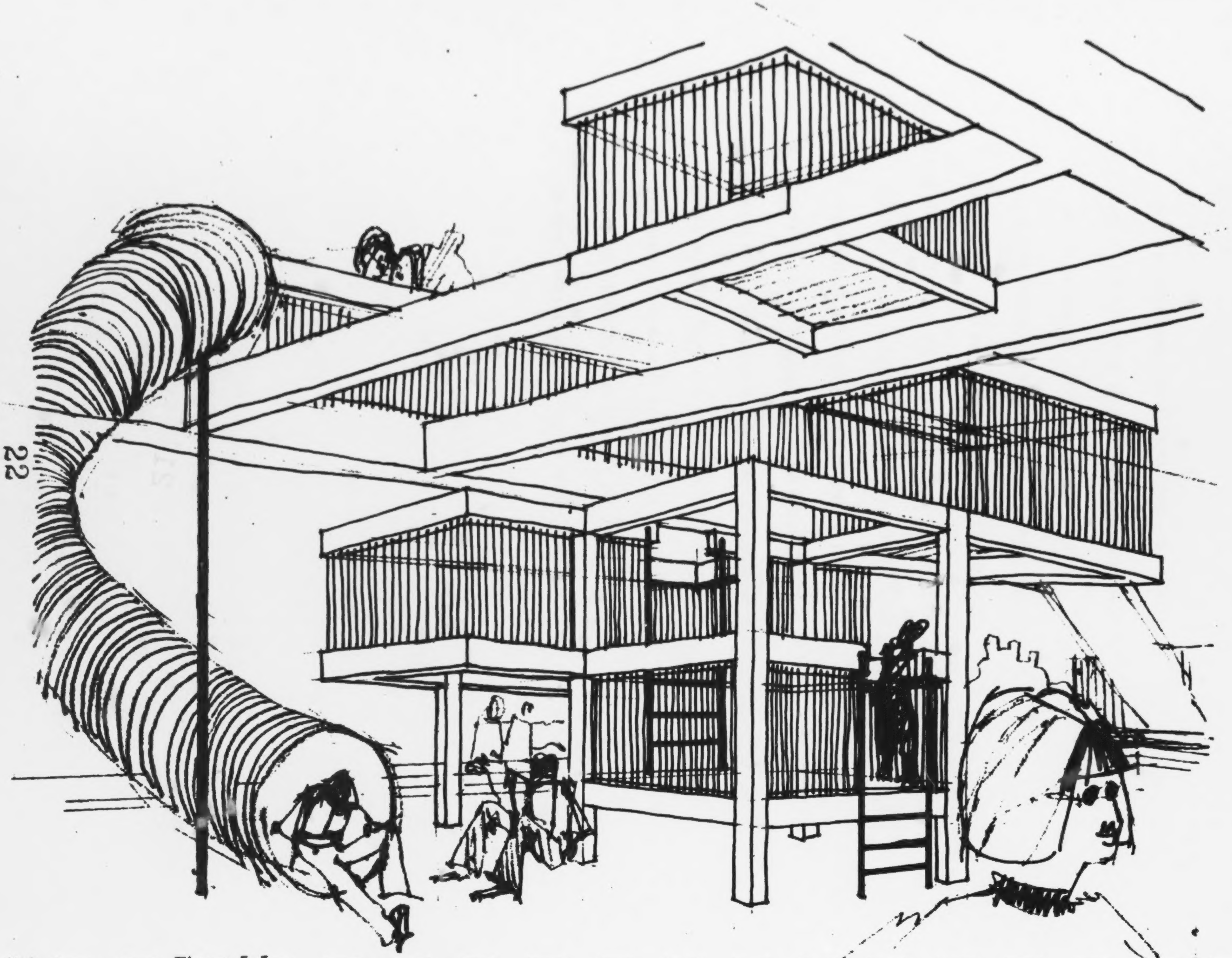

PROJECT ALCOVE
STAGE I

Figure 5-4.

equipment, and movable partition systems are described in greater detail in Sections 5.3 and 5.4.)

Six separate areas at the periphery of the large, open space, each 10' x 20' with exterior windows above the floor, will be used for projects. The alcoves have masonry walls with standards and brackets for shelving and displays on two sides. Designed for small groups or individuals, they can be isolated from the main space by drawing a curtain. Carpets can be easily put on to convert the alcoves from project into study or rest areas. Incandescent lighting provides warmth and offers a contrast to the fluorescent lighting in the large, open space. (See Figure 5-4 on opposite page.)



Fi e 5-

- **Indoor Play Structure**

  Adjacent to the large open space and immediately accessible to two outdoor play areas is a two-story, six-level structure designed for children. It consists of a series of platforms, ladders,and ramps at different levels ascending to the Stage II area and the skylight above. There are a number of ways to climb up and down between the two stages and a variety of spaces for different activities. The structure will be used for recreation, kinesthetic exercise, small-group meetings,and other activities. (See Figure 5-5 on opposite page.)

- **Circulation**

  Circulation through Stage I is designed to be informal. There are no corridors. Primary access will be through the administration and community area and the lounge-lobby in the center of the building. Parents and visitors wishing to observe the operation can be accommodated in several ways. They can be separated from the program with demountable partitions made of one-way glass or included in the program by moving through the space while classes are going on.

- **Summary**

  The traditional classroom frequently exists as an isolated box with desks, chairs, and small displays serving as the only visual stimuli. In contrast, the large, open space with adjoining alcoves and play areas in the First Facility will be designed as a space to be manipulated and decorated on a large or small scale by the inhabitants. The group responsible for the organization of the Stage I education must locate partitions, organize space according to group sizes and group characteristics, and consider spatial relationships as an integral part of the learning experience.

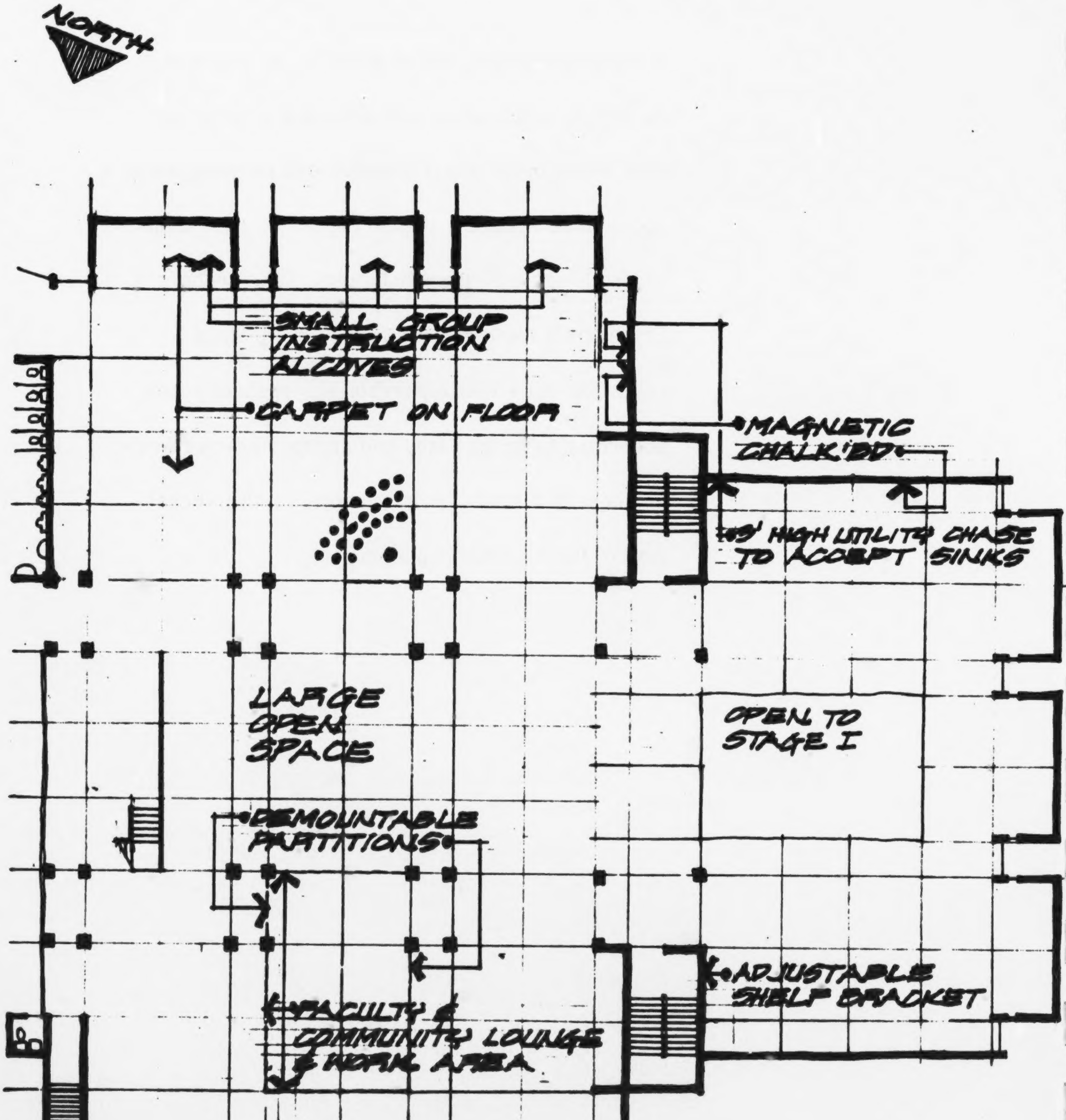

NORTH
SMALL GROUP INSTRUCTION ALCOVES
CARPET ON FLOOR
MAGNETIC CHALK'BD
5' HIGH UTILITY CHASE TO ACCEPT SINKS
LARGE OPEN SPACE
OPEN TO STAGE I
DEMOUNTABLE PARTITIONS
ADJUSTABLE SHELF BRACKET
FACULTY & COMMUNITY LOUNGE & WORK AREA
STAGE TWO (II)

Figure 5-6.

5.2.4 Plaza Level West — Stage II

This area will serve 235 children in Stage II aged 5 - 7.

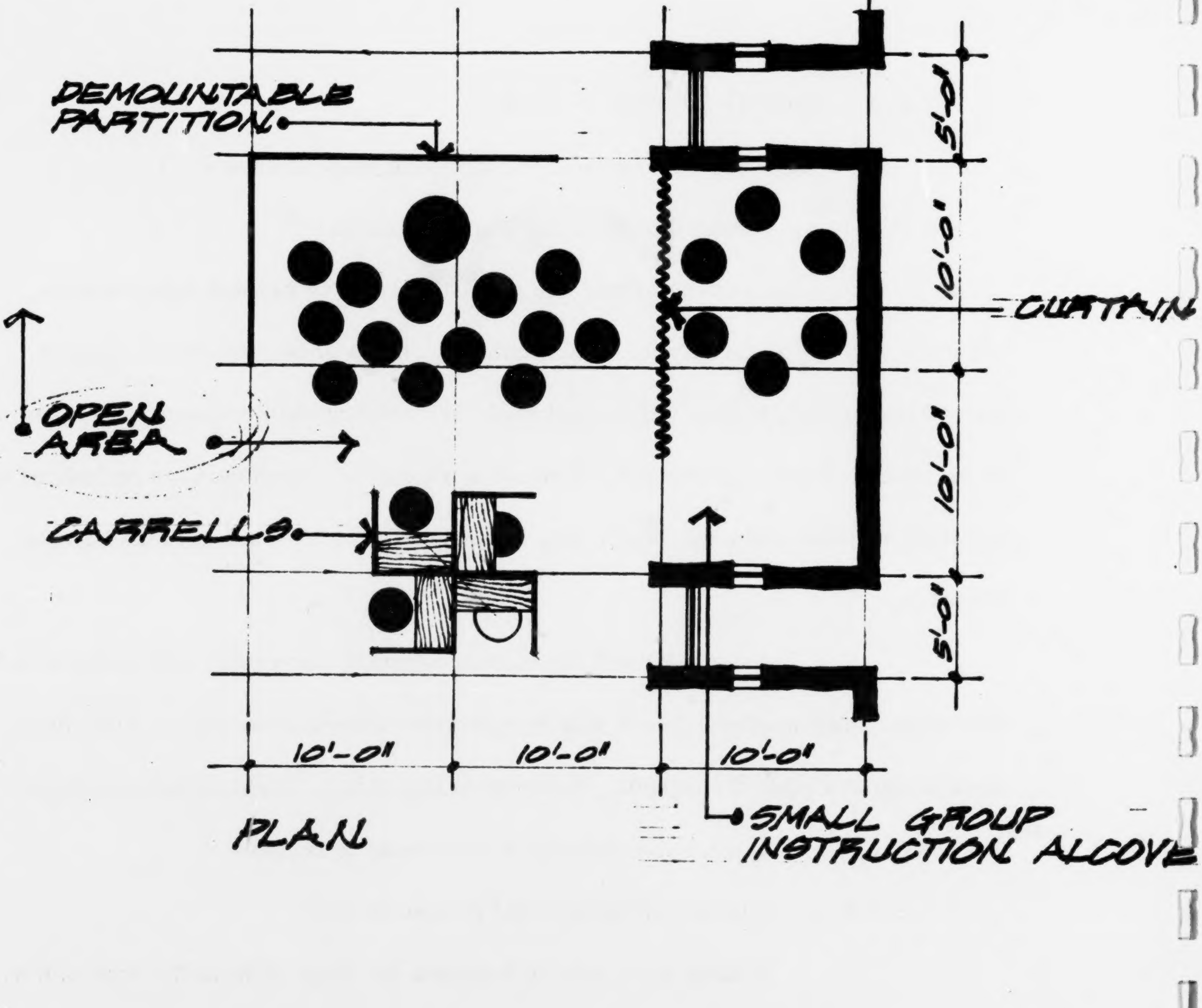
5.2.4.1 General Educational Characteristics

Children of this age generally begin to develop independence, security, and responsibility for their actions. They will be introduced to more formal instruction, testing will be initiated, and reading skill and comprehension will be stressed. Formal group and individual work will be introduced for periods of ten to twenty minutes and experiences will be designated to increase persistence and attention.

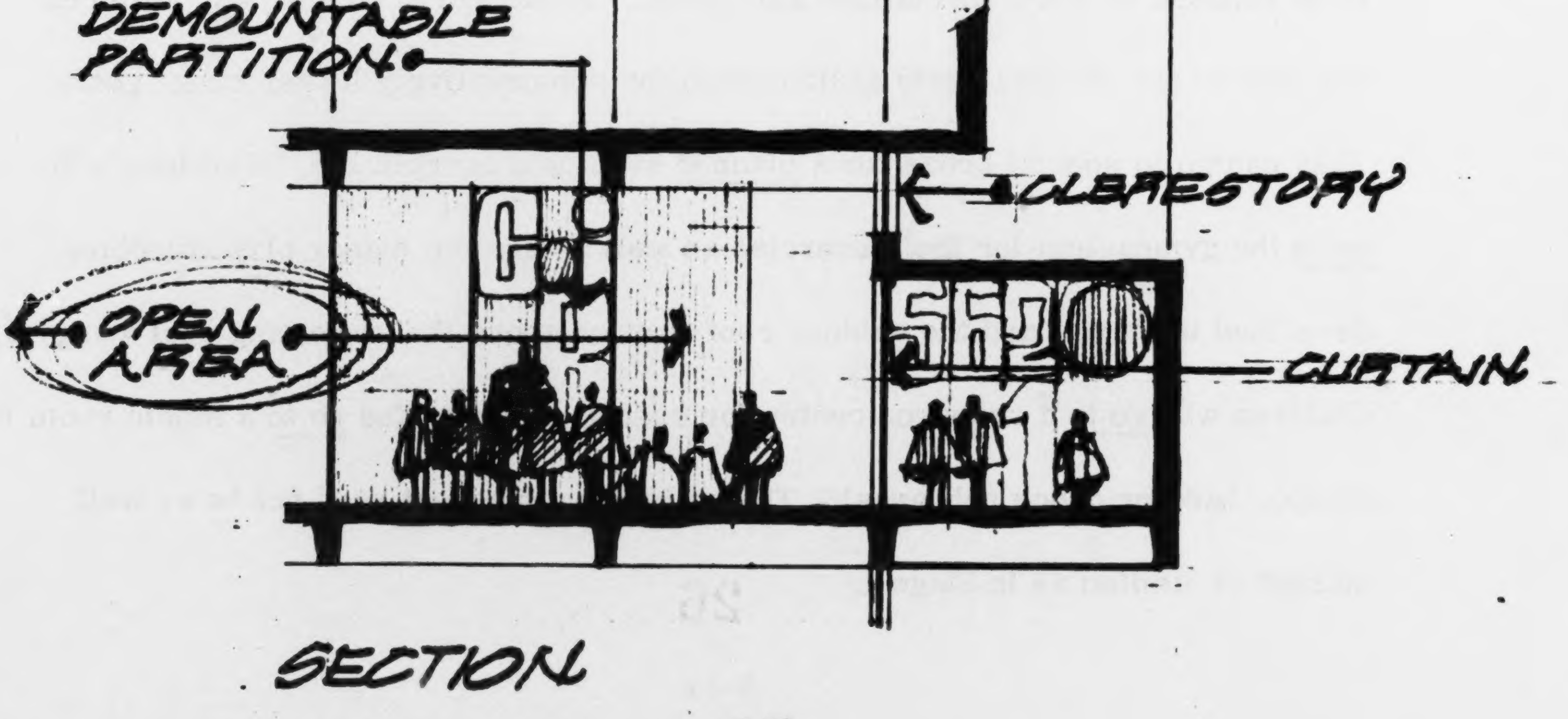
As specialized instruction begins to increase, well equipped areas will be set up as needed. There will be resource materials as well as individual work areas available throughout. Arts and crafts will be taught to develop digital dexterity and to introduce the students to vocational techniques.

5.2.4.2 General Environmental Characteristics

A large open area is designed for Stage II as in the area below. However, the articulation of the space will differ because children of this age need to be exposed to more specialized activities. By the age of five or six, children are able to put off immediate gratification for comparatively longer range goals. They can go to special areas for a planned event and carry it out. Children will go to the gymnasium for their exercise as well as use the indoor play structure described in Stage I and the outdoor roof surface above the swimming pool and gym. Children will go to a resource center for special projects and go to a music room for choral, band or dance rehearsal. The child's environment need not be as well defined or limited as in Stage I.


DEMOUNTABLE PARTITION
OPEN AREA
CARRELLS
CURTAIN
5'-0"
10'-0"
10'-0"
5'-0"
10'-0"
10'-0"
10'-0"
SMALL GROUP INSTRUCTION ALCOVE

PLAN


10'-0"
10'-0"
10'-0"
DEMOUNTABLE PARTITION
CLERESTORY
OPEN AREA
CURTAIN

SECTION

Figure 5-7.

- **Large Open Areas**

This space, which is slightly larger than the Stage I area, could accommodate eight classrooms. The activities to be included in this space are:

For Faculty and Community:

- Teacher wardrobes and work area
- Community and faculty lounge
- Teacher/parent planning areas
- Workspace with carrels for paraprofessionals and parents
- Telephone stations (4)
- Community supplementary programs
- Resource area
- Storage for learning packages, supplies, and materials

For Students:

- Project areas with tables to encourage small group work
- Dramatic area for incidental productions
- Storage of clothing and other personal property in rolling casework
- Storage and display for resources and individually prescribed learning packages
- Special projects area: along the walls of the large space are small areas with vinyl asbestos tile floors to be used for wet activities. There is a utility duct running along the wall so that a laboratory table with a sink, or a water table can be plugged in easily.

This type and number of areas described above will be developed by the staff. The spatial arrangement can be changed hourly, daily or periodically each month. Descriptions of the methods of change are discussed in Sections 5.2.8.4 and 5.2.8.5.

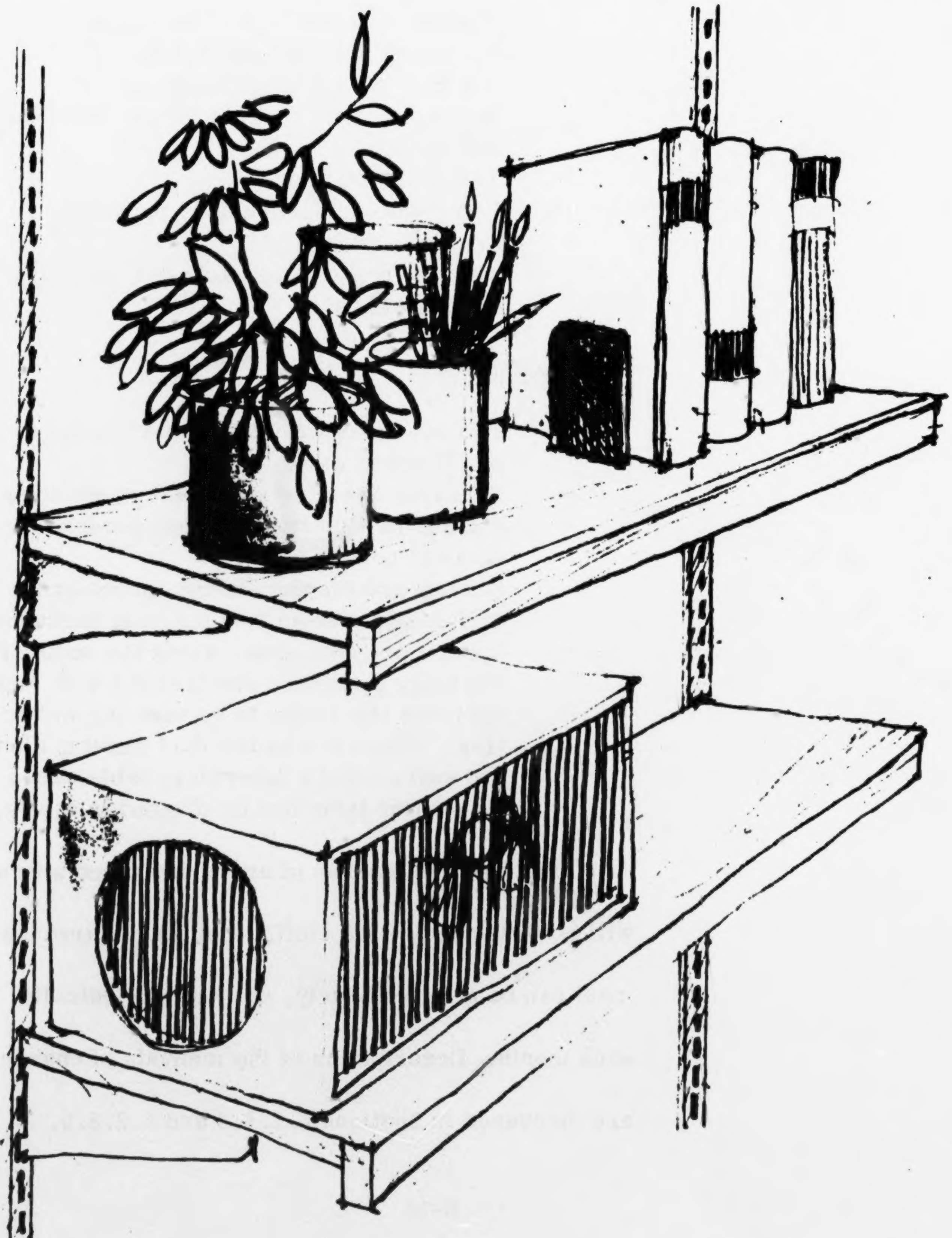


Figure 5-8.

- **Quiet Reading Areas**

  As in Stage I, alcoves will provide quiet reading areas in Stage II. There are nine areas 10' x 20' in size. Although each one has the same characteristics, each alcove will be used differently according to the location of other activities within the large, open space and the equipment and furnishings within the areas themselves.

  Each area will have carpets and incandescent lighting. The ceilings will be low. The wall surface will consist of metal tackboard-chalkboard with wall bracket standards occurring on a module of four feet. The standards allow an adult to add shelves, displays, or three dimensional wall hangings with ease and speed. There will be demountable partitions to enclose or divide these areas in two as needed. (See Figure 5-8 on opposite page.)

- **Outdoor Recreation**

  Since children of the ages seven to twelve are physically active and are beginning to learn and enjoy team-oriented games, an outdoor play area on the roof of the swimming pool and gymnasium is located adjacent to the Stage III and IV area. It is designed for active games including volleyball, badminton, and tetherball as well as other forms of play. A fireplace and sitting area will be used for snacks and picnics and serve as an additional decentralized eating area.

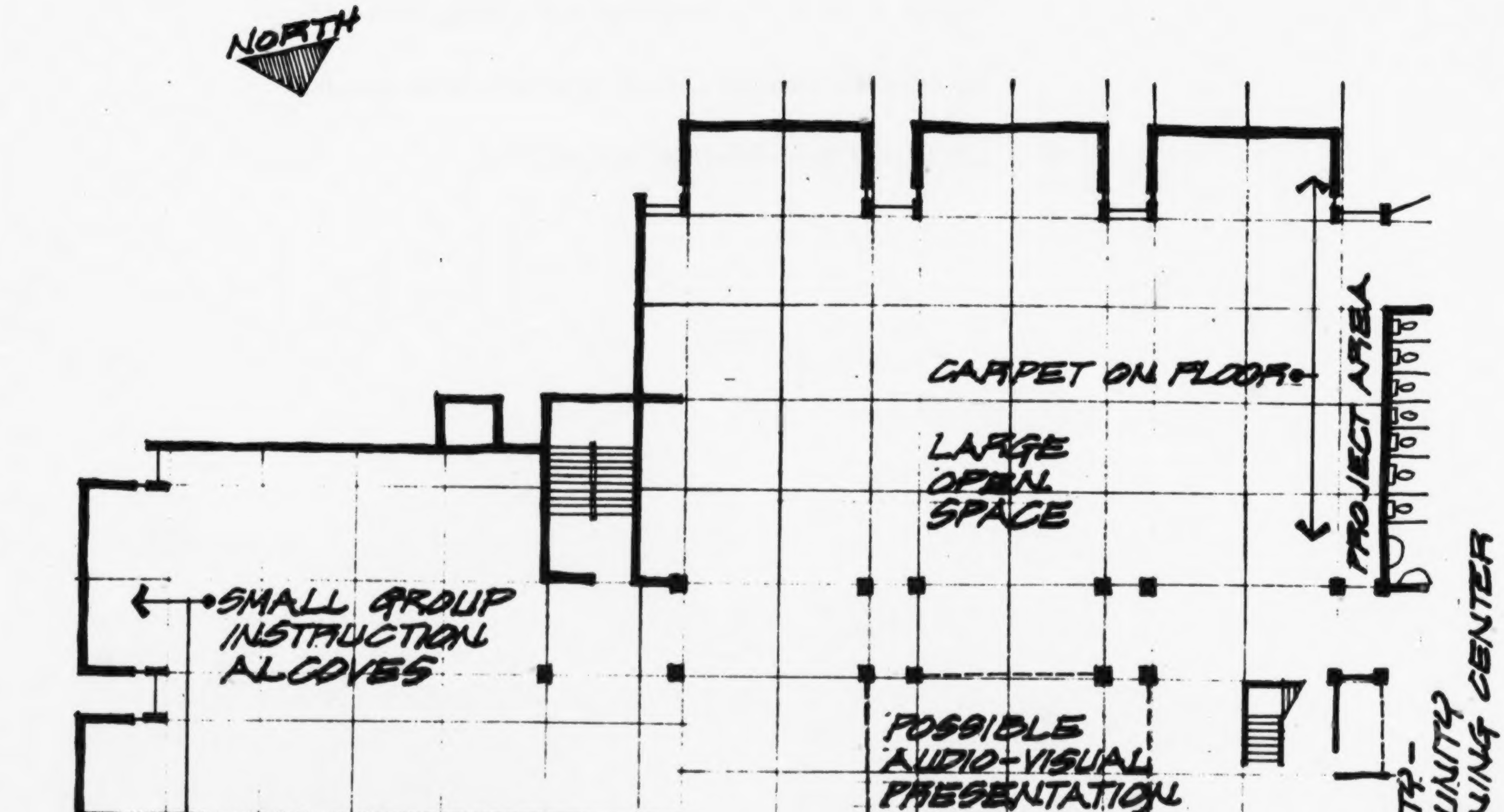

NORTH
CARPET ON FLOOR
LARGE OPEN SPACE
PROJECT AREA
SMALL GROUP INSTRUCTION ALCOVES
POSSIBLE AUDIO-VISUAL PRESENTATION AREA
GEN. INSTRUCTION AREA
FACULTY-COMMUNITY PLANNING CENTER
TO RESOURCE CENTER
PROJECT AREA
ROOF DECK RECREATION AREA
UTILITY CHASE TO ACCEPT SINKS
STAGE THREE & FOUR
(III) (IV)

Figure 5-9.

5.2.5 Above Plaza Level West — Stages III and IV

This area will accommodate 290 children aged 7 - 12.

5.2.5.1 General Educational Characteristics

Stages III and IV have been combined into one area because the children in this age range will be engaged in similar activities. Instruction will be based on the capabilities of the child with each student progressing at his own rate of speed. Educational materials of all types and equipment such as tape recorders, typewriters, cameras, and projectors will be used. Students will participate in reading, writing, listening, lecturing, discussion, research, and construction — alone and in groups. They will be encouraged to use much of the audiovisual and other special equipment themselves. Whenever possible, activities will provide well defined objectives for the students to achieve. Reading and mathematics will be stressed as well as concept formation, psychomotor skills, creative self-expression,and beginning process skills related to work.

5.2.5.2 General Environmental Characteristics

The large open space in Stages III and IV is intended to replace a number of classrooms. The types of groups established within the area will remain continually flexible. The grouping will vary as small groups and individuals engage in learning activities. Spaces will be defined to allow children to project filmstrips, to have seminars with three to fifteen students and perhaps a teacher, to get together in a group of seventy for an informal dramatic presentation, to collect at tables for a group project, to go to a carrel to work on a research paper, etc. This flexibility in arranging the space will provide the staff with many options. However, if the options are not used — if the partitions are not "mounted and demounted" or the rolling casework is never rolled — this general, versatile space can turn into a stagnant and traditional school configuration.

- Large Open Areas

This area is larger than the Stage I and Stage II areas. It is similar in plan to the Stage II area and is intended to include the same activities. Space dividers may be set up into more formal arrangements here than in the areas for younger students because the methods of instruction as well as the subject material generally require the students to concentrate and work at one activity for longer periods of time.

Project areas on the periphery of this space allow individuals or groups to work on projects for longer periods of time. There is direct access by stairs to the mezzanine above as well as direct access to the resource center located on the same level. This area will be used for a variety of purposes. This includes parent-teacher conferences, classes for adults, and other supplementary community programs.

This space is expected to be changed. Therefore the use of the large space at any one time cannot be predicted.

- **Small Group Instruction Alcoves**

  The alcoves are identical to those in Stage II in size and shape. Because students of this age generally begin to engage in one-to-one confrontations and small-group work, these spaces will often be used by more than one student at a time. Two, three, or four students, with or without a teacher could work on a research project together or drill each other on an exercise.

ABOVE PLAZA LEVEL - CENTER

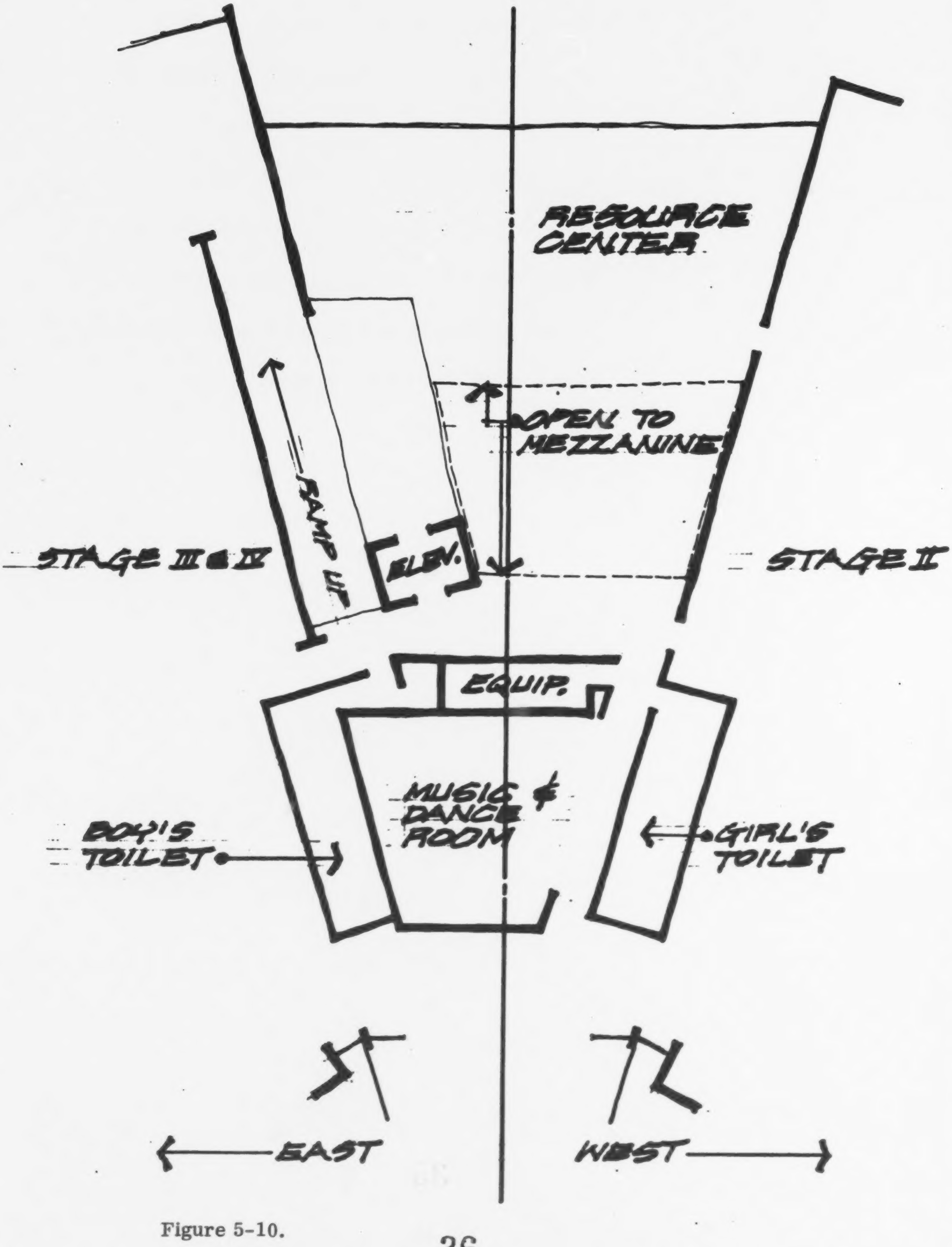

RESOURCE CENTER
OPEN TO MEZZANINE
RAMP UP
ELEV.
STAGE III & IV
STAGE II
EQUIP.
MUSIC & DANCE ROOM
BOY'S TOILET
GIRL'S TOILET
EAST
WEST

Figure 5-10.

5.2.6 Above Plaza Level — Center

Connecting the two large areas for Stage II and Stages III and IV are facilities for common use: music and dance room, the resource center, and the lavatories. The music room is isolated to reduce acoustical distractions in the large open spaces.

The resource center will be equipped with "wet and dry" carrels, work tables, and resources for advanced work including slide-tapes, filmstrips, records, books, etc. This center is intended to reinforce the material available in the stage areas.

In addition, periodicals and research materials for adults will be available. It will be possible to adapt materials, furnishings, and equipment for adult use as necessary.

MEZZANINE

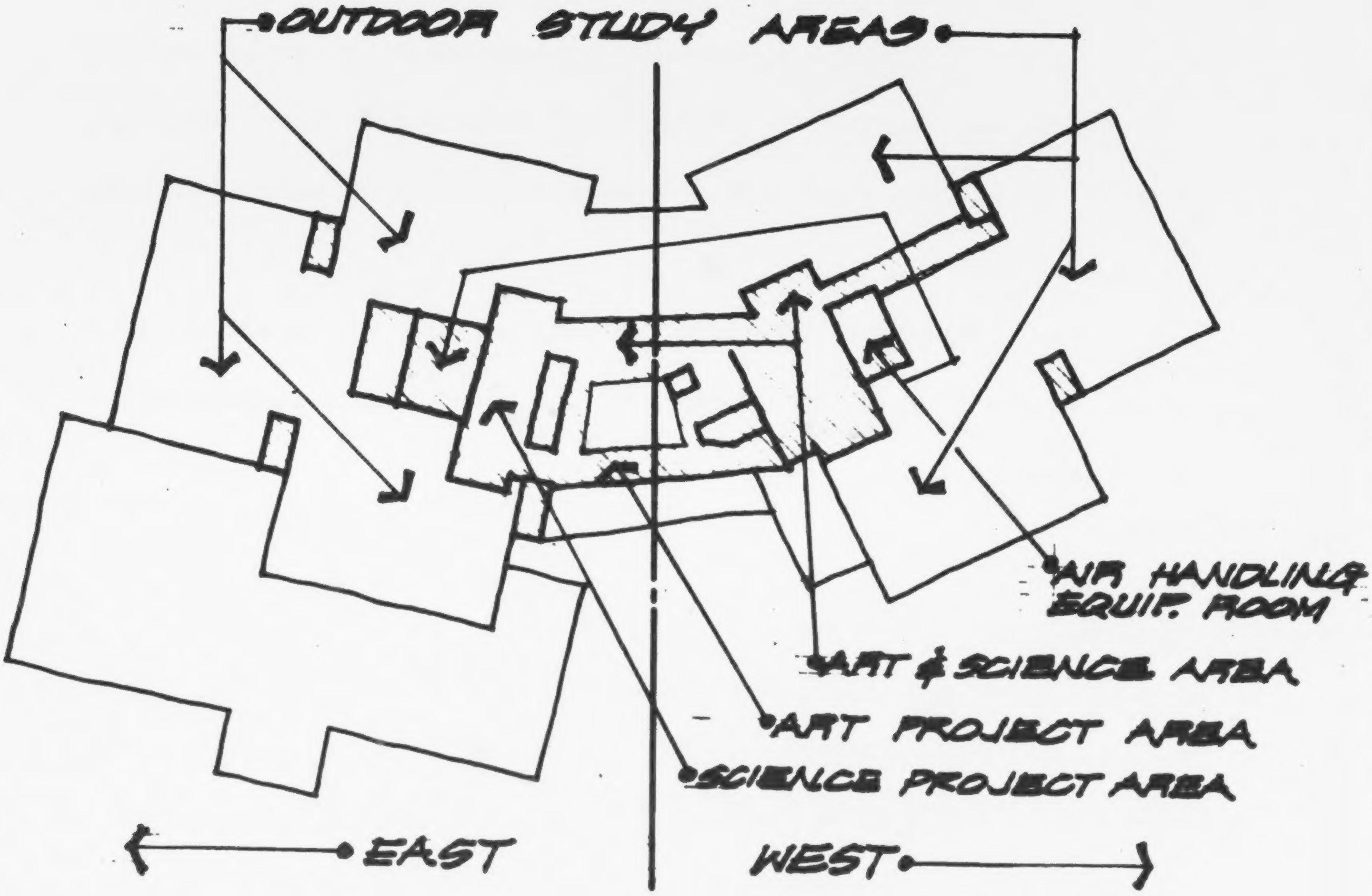

OUTDOOR STUDY AREAS
AIR HANDLING EQUIP. ROOM
ART & SCIENCE AREA
ART PROJECT AREA
SCIENCE PROJECT AREA
EAST
WEST

Figure 5-11.

5.2.7 Mezzanine

The mezzanine serving the entire school includes a science area and planetarium with a domed ceiling, a dark room for photography, and project areas for art and science. Located above the resource center and music room, it connects two stairways in the general learning areas and provides access to planters and project areas on the roof.

In addition, the mezzanine contains a cooling tower and a room for air-conditioning equipment. In the same way that the boiler room and the kitchen are to be used for special studies and observations, these areas should be utilized by the students.

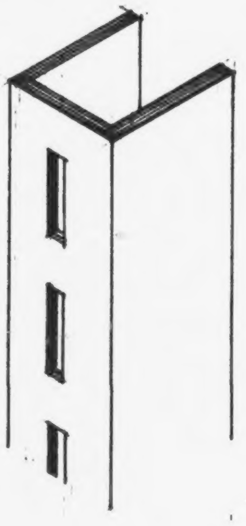
- Outdoor Roof Areas

  The outdoor area adjacent to the mezzanine has been designed for instruction and recreation. Planters for raising flowers, vegetables,and plants on the periphery serve as a protective fence. Science and art projects should be undertaken both inside and outside this level. Because of the decentralization of snack facilities, students may eat in the outdoor roof area.

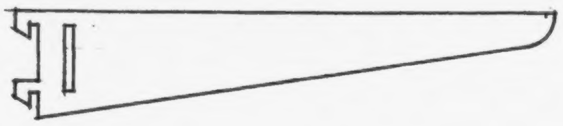
5.2.8 Flexible Features

5.2.8.1 Wall Brackets and Standards

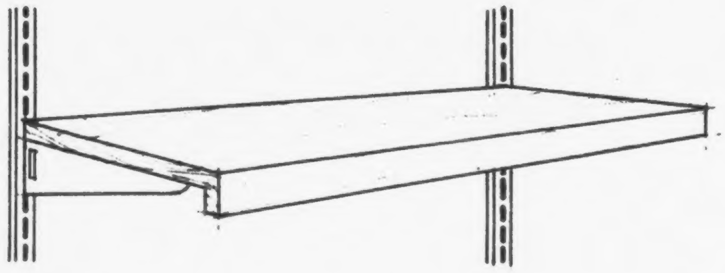
Wall brackets and standards are set into most of the interior walls to be used for display or storage as needed. Individual areas are not designated for specific purposes. The wall bracket standard, which is sketched below, also provides an interesting modular design when not in use. The bracket standard:



is designed to receive a standard book shelf bracket:



And two of these will support a shelf at any height:



The brackets themselves can also be mounted on the demountable partitions as well as the modular carrels recommended for the facility. This continuity should enable the staff to design innumerable useful storage and display units as well as mount graphic panels. It is hoped that the standard item will acquire new uses and new designs as the staff works on it.

5.2.8.2 Movable Equipment

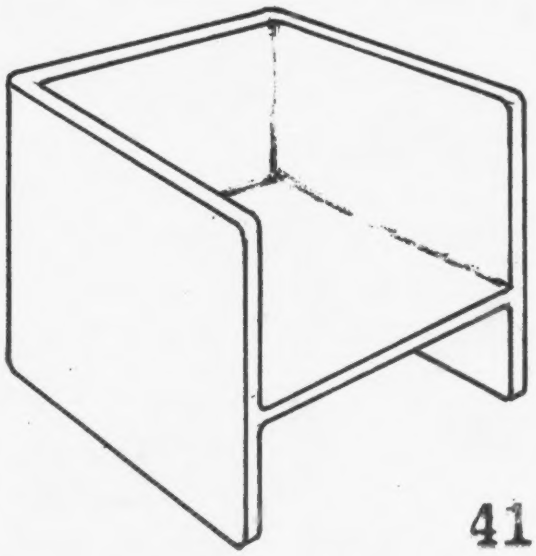
Many of the storage needs which, traditionally, are served by fixed closets or built-in cabinets, will be filled by rolling casework. Some will be low so that a child can see over them and others will be higher to create privacy. They will provide:

- Cubbies for personal belongings
- Hooks for outside garments
- Instructional papers and books
- Games and toys
- Teacher's wardrobes
- Teacher's work space
- Student carrels (if desirable even these can be on casters)

5.2.8.3 Two Alternatives to Desks and Chairs

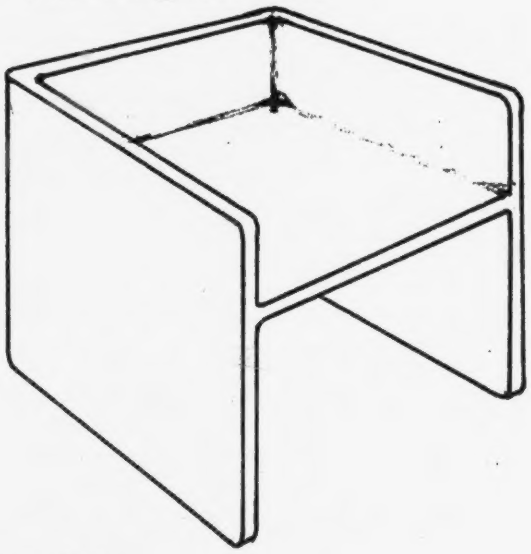
Frequently, when a large open space is used in place of the traditional classroom, the equipment and furnishings used in the old classroom are put into the new space. Consequently, the freedom and flexibility offered in the open area are impaired because of the many desks and chairs.

Through the efforts of the Educational Facilities Laboratory, several alternate types of equipment have been devised. The first, which is currently on the market, is called the Educube. It is manufactured by the Monsanto Chemical Company of St. Louis. It is a polyethylene cube which is a chair:



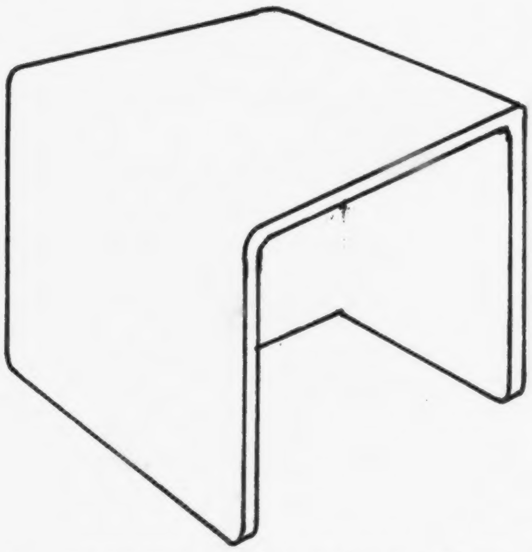
for small children

A chair turned over with a higher seat:

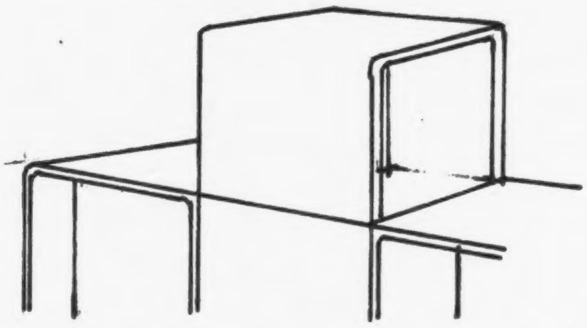


For larger children

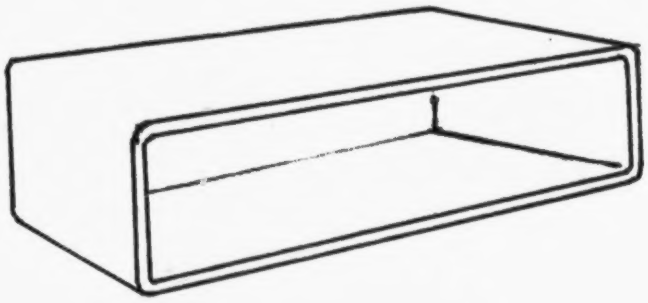
And a desk for either chair:



Stacking combinations and desk-chair combinations are numerous. The cubes, which come in primary colors, will be decorative and easily stacked when not in use.

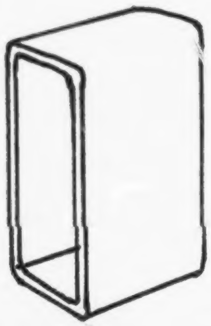


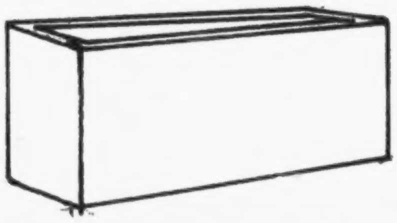
Another alternative, which is now in the development stage, is a modular solution made up of two parts. It should be available in prototype form in the fall of 1969 and in production in time for the First Facility. It can be a table:



with a rough surface to stand on or to prevent slipping along a carpet and a smooth surface for writing.

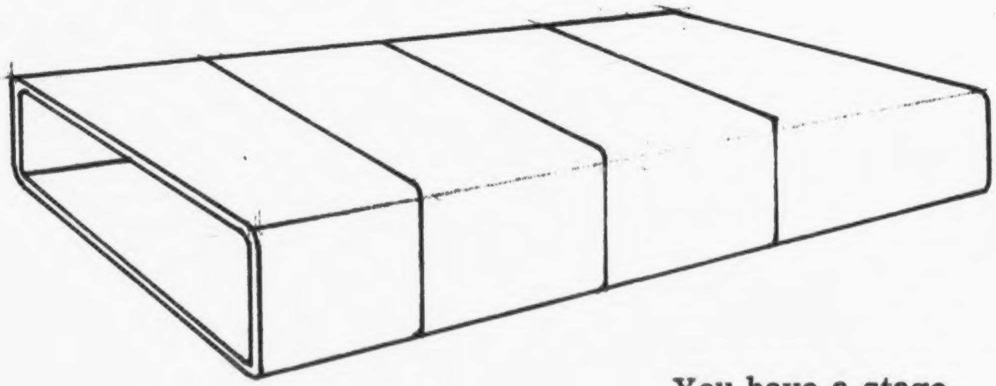
If you turn it on end or on its side:





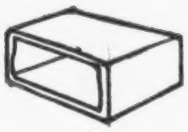
it is an excellent space divider or projection screen.

If you put several together:

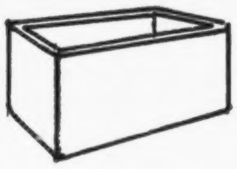


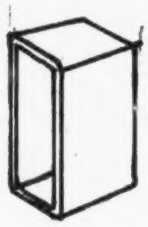
You have a stage.

The smaller of this component is a stool:

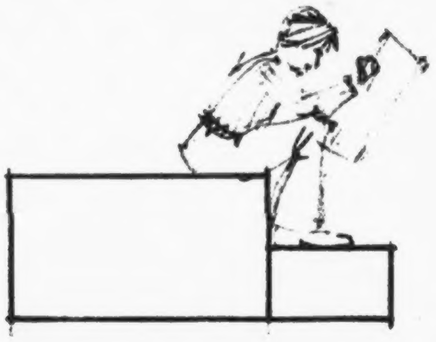


which can be set up many ways for different heights:

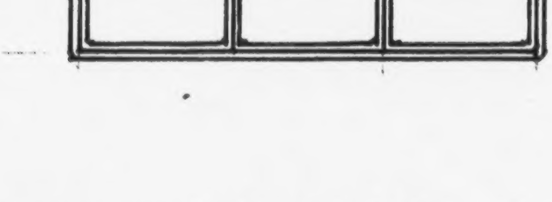




This small unit can be used with the table:



and six small ones can be stored in one large one:

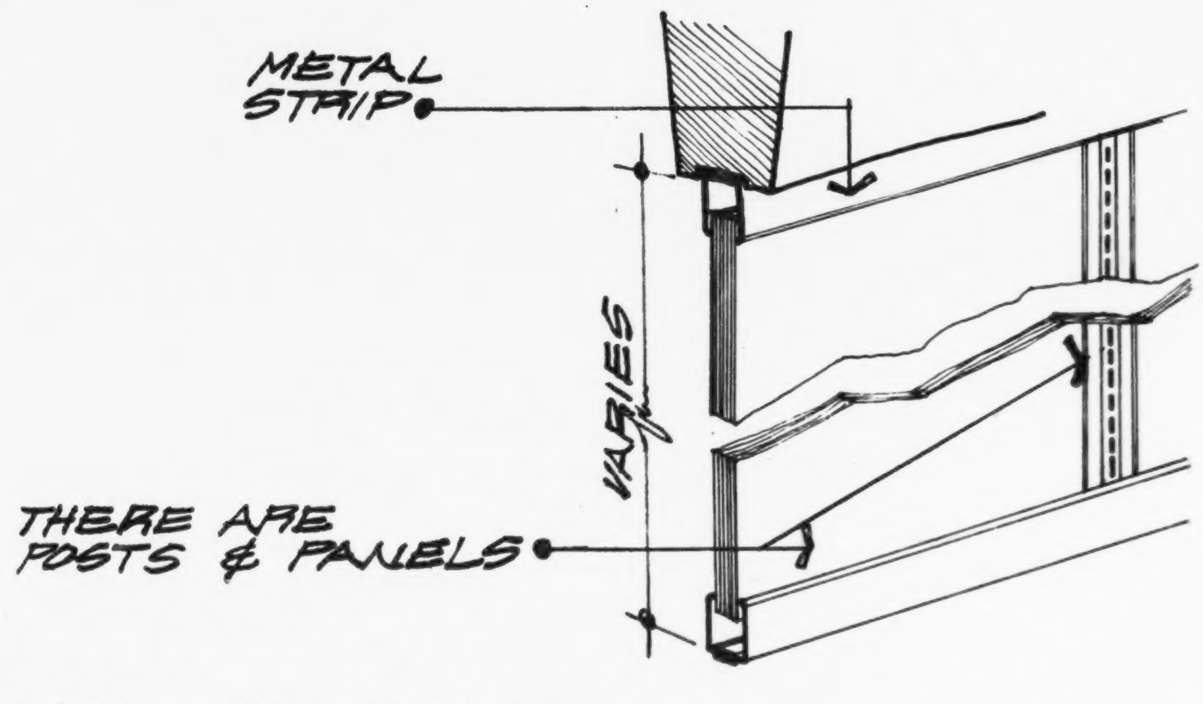


These products serve as desks and chairs and obviously can fill a variety of functions.

5.2.8.4 Demountable Partitions

The demountable floor-to-ceiling partitions should be used to accent and divide the general learning areas. Partitions sold by the Hauserman Company are specified for the facility.

These partitions require a metal strip to be installed at the bottom of the ceiling beams to hold the posts for the partitions. The grid ceiling is designed to hold this strip which can be installed permanently or changed periodically by the custodial staff. Once the strips are set in the ceiling, the installation of the partitions is simple.



5.2.8.5 "School Mates" Carrels

These carrels designed by the Hauserman Company are similar in materials and design to Hauserman's "Action Wall". They are 50 to 70 inches high and can be arranged in numerous configurations. The carrels can hold the standard wall brackets and shelves used on the permanent and demountable partitions. They can simply divide space or they can be set up as desks or individual or small group project areas.

5.2.9 Communications System

In traditional schools, various types of communications systems are used. These include intercom and paging equipment, bells, clocks, and other audiovideo systems.

In the First Facility, these components will be combined into a comprehensive intercommunications system. Two master systems, a random access intercom and a closed-circuit television system, would form the backbone of the communications for the school. Other independent systems such as the bells and the public address system would be tied to the master systems in a way that avoids unnecessary duplication of equipment and yet preserves the essential characteristics of the subsystems. The general approach used in planning the communications system is described in Appendix A.

- The Audio System

  In concept, the audio design is an evolution of older intercommunication systems where users could talk to and from a central point. Through modern equipment, it is possible to set up much more complicated two-way communication systems between individual learning areas and the central office and between separate learning areas. Under the proposed system, it should be possible to communicate privately by telephone and publicly by microphone and loud speaker.

  For example, supervisors may talk privately or through speakers to various school areas. Teachers may talk to aides across a learning space or may talk to each other from one learning area to another. Or, the school principal may preempt all existing communication and talk to the entire school - or to various zones in turn. Various program materials such as background music or taped information may be tied to the overall system at central or zone control points.

The basic equipment necessary for such a system includes two types of units: control equipment at the central administrative office and selected zone stations (such as department offices or special activity areas) for relaying, switching, and monitoring communications to and from stations or groups of stations in that zone; and "field" equipment in the individual learning areas for selecting programs and receiving and transmitting communications to other areas. Outgoing calls usually go at the control station administratively associated with the learning area where they can terminate or be routed to other areas in the building.

A variety of program sources should be available. They should include: background music, "white noise" or background noise for the larger areas, an FM or broadcast tuner, output from an auditorium amplifier,and materials from the local learning areas.

- Closed-Circuit Television

The closed-circuit television system makes it possible to broadcast educational and selected commercial programs to the learning areas and the community spaces. It also provides for the distribution of locally produced television material (made with television cameras or videotape recorders).

It is recommended that an underground cable with "CATV" be set up for the entire school system. Such a system would eliminate much of the need for masts and antennas on top of each school building and for special converters at each school to convert Channel 26 and future ITFS channels to standard VHF.

5.3 Graphics

Graphics is a term used to refer to signs of every shape, size, and color designed in relation to school spaces. Only in the last few years has the use of color and graphics in schools begun to be studied as a learning tool for educational and environmental objectives.

The current concept is that a sign -- any sign -- can be more than a directional stimulus. All signs fall into two general groups: abstract graphic indicators and verbal graphic indicators. Both can be conceptual, teaching a lesson as they chart a course. They can be flexible, allowing the child to manipulate and change them to meet new needs or functions. The color used on a graphic indicator has a double-barreled approach, teaching relationships in space between areas coded by color. Finally, it need not be a sign at all but merely an idea or concept employed graphically.

This section outlines and illustrates a program of graphics and color for the First Facility. The types of graphic hardware and software as well as the relationship of graphics to color in architectural finishes and the function and furnishings specified will be explored.

5.3.1 Graphic Hardware

Signs or graphics can be divided into two general groups, directional and conceptual. The directional sign is often permanent while the conceptual one may be variable and flexible.

In conventional schools, the very permanence of directional graphics is a negative, stultifying factor, making it difficult to achieve flexible or varying use of spaces. How can directional graphics change or be changed by children? Perhaps the goal should be a continuous graphic redefinition of space.

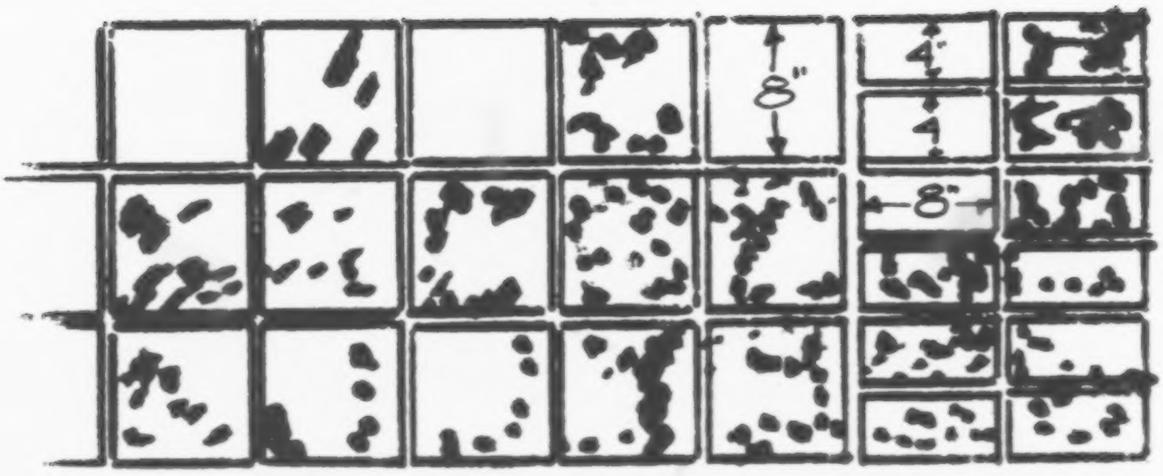
Some examples can be helpful. In the First Facility, for example, the basic building materials are modular -- brick and concrete blocks, each having its own characteristic dimensions which are related by multiples of 4. It is easy to see how this module, though permanently embedded in mortar, can be redefined by its dimensional characteristic.

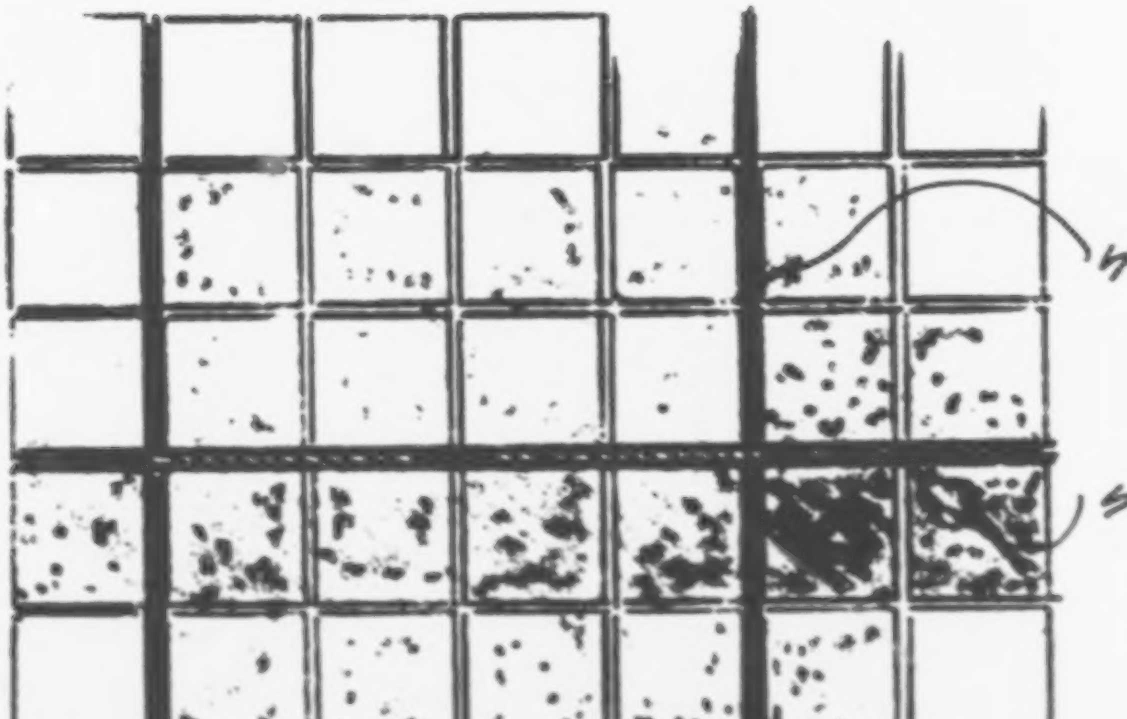
For instance, in the First Facility, the block is arranged in 4' modules punctuated vertically by slotted standards designed to support shelves and other accessories. (Figure 5-12)

By painting or coloring these modules of 8" and 16" in series or sets, it is possible to demonstrate or simply allow the child to figure out relationships by number and color. Indeed, if a block were to be omitted from time to time or another to protrude, (Figure 5-13) it is almost possible to see progress of a child's thought from concrete experience to a high level of abstraction. The same procedure, of course, could be used with brick. In fact, any type of masonry screen, properly located and colored, can be a challenging lesson. (Figure 5-14)

It is also possible to use the modular quality of steps to develop graphics.

Steps can be used as seats -- the addition of a soft surface such as carpet can easily convert a step into a chair; as numbers -- numerical symbols can be run up or down a series of steps; as an experience in space -- risers,





STANDARD
SHELF

Figure 5-12

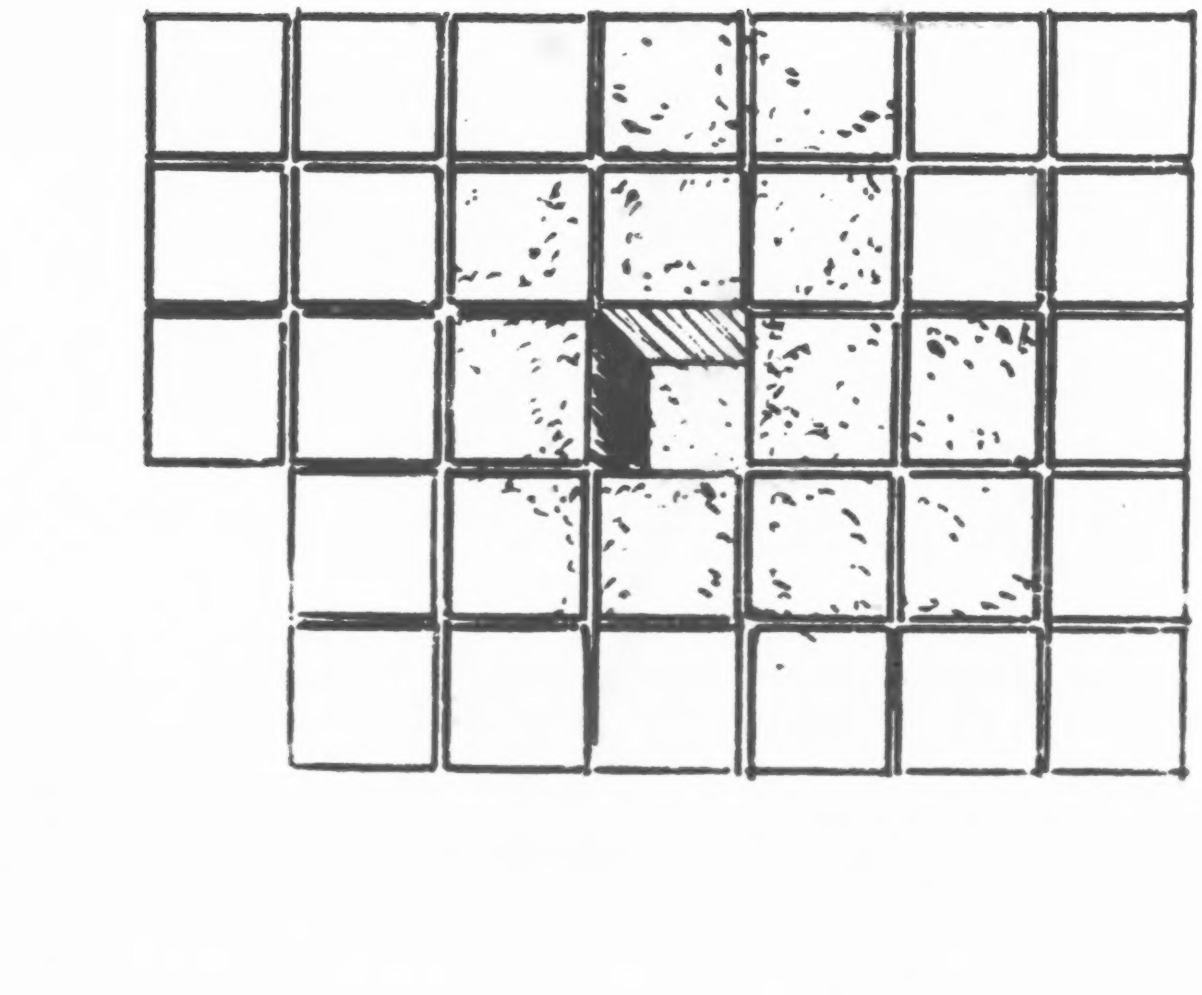


Figure 5-13

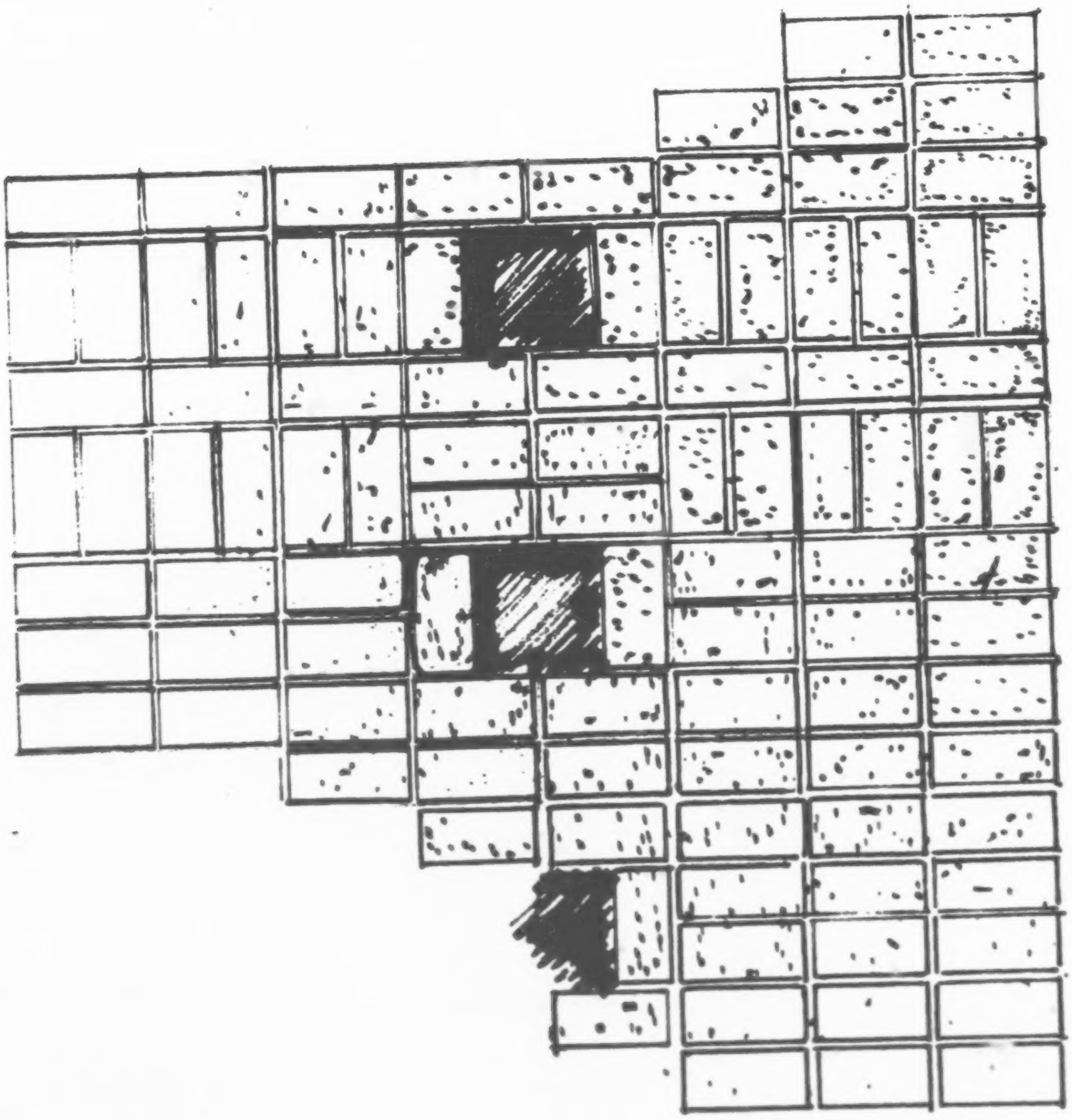


Figure 5-14

color-coded to relate to the space below or above, can provide the child of 4 or 6 with the kind of experience he needs to understand transitions in levels. (Figure 5-15)

On the other hand, to show how the school is built, a graphic illustration could be a cut-away or glass partition showing structure or plumbing or wiring behind walls or differing ceiling heights appropriate to children of varying age and size. Or to allow the child to make his mark on the school, a giant autograph book or carving tree could be created in selected areas where the material and location would make carving names and initials irresistible. (Figure 5-16)

The kinesthetic and textural aspects of the architectural space can be explored further as well. In the First Facility, where a ramp connects the two walls, would it be possible to make the railing in ripples instead of conventionally straight? It would be almost as much fun as running a stick against a series of posts to be able to run up or down a ramp with a rippling rail. Modern plastic rails can be molded into any shape required to create this form. (Figure 5-17)

Different flooring surfaces should also be explored. Going from a rough pebble texture to a smooth resilient flooring to the softness of carpet can be a conceptual experience. If the color, shape, and size of textures used approximate the activity in the area, a conceptual abstraction can be learned.

In schools, as in hospitals, office buildings, hotels, and almost any nonresidential area, graphics are used to indicate locations. In the First Facility, as for any new school, it would be desirable to use directional indicators that could be changed easily and without any great expense.

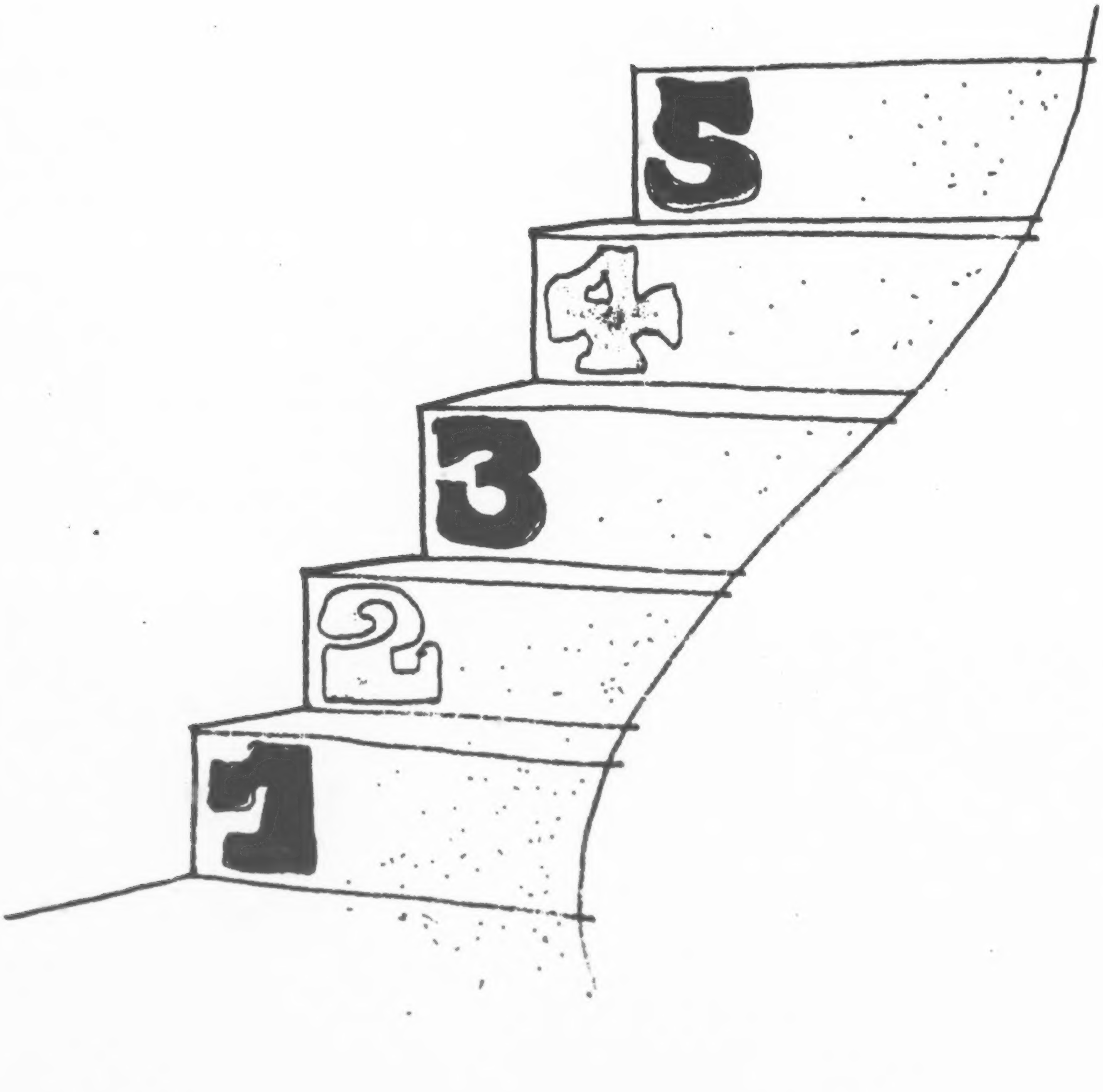
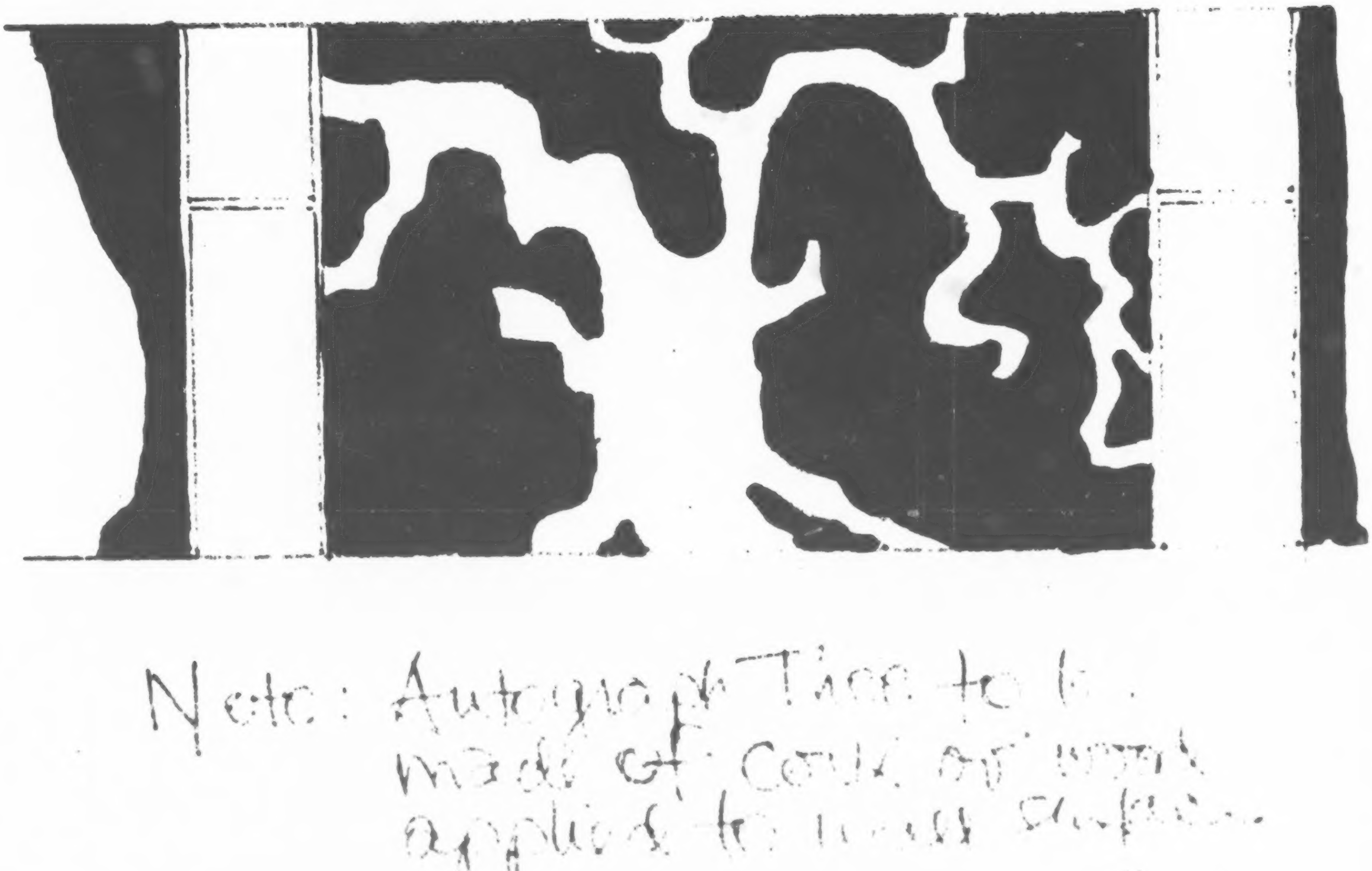
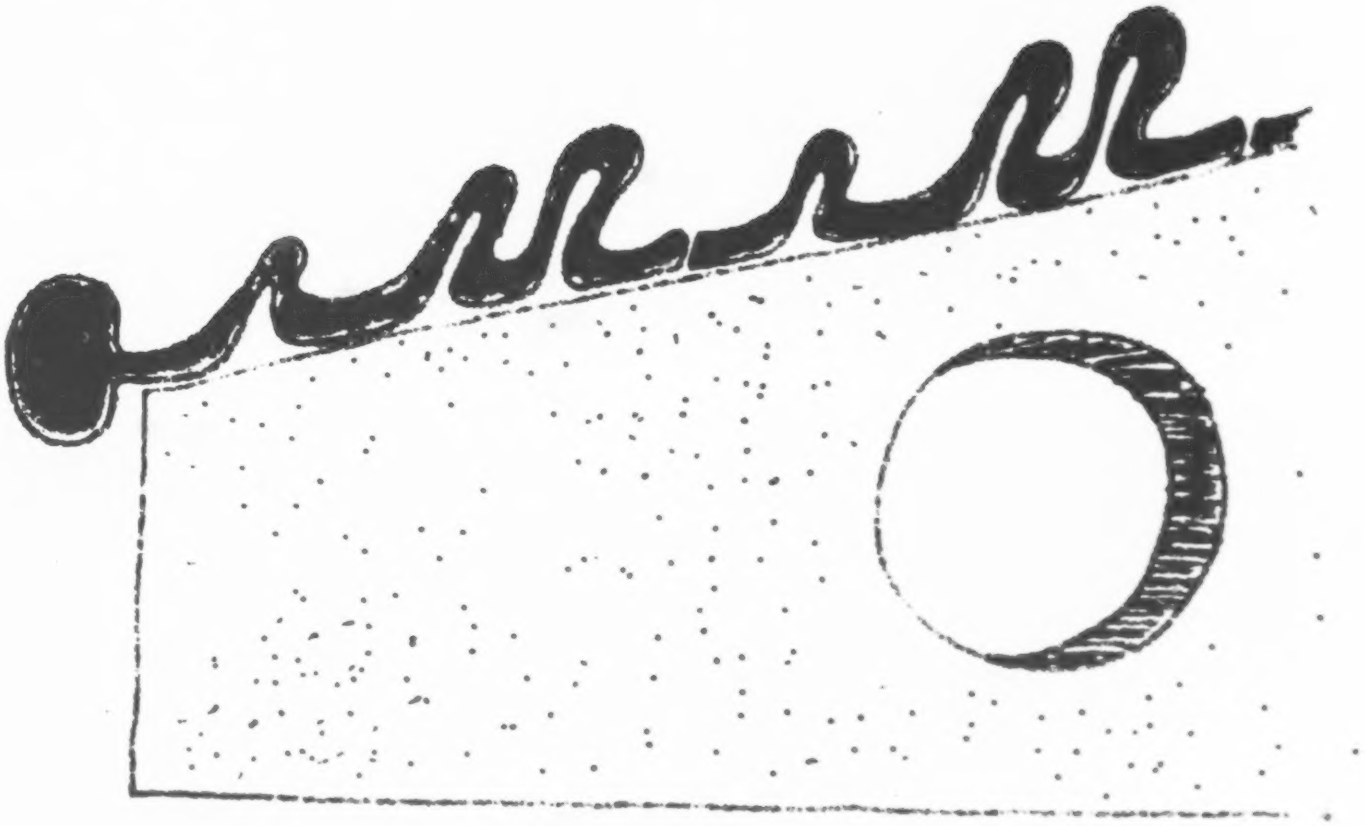


Figure 5-15



Note: Autograph Tiles to be made of cork or wood applied to wall surface.

Figure 5-16



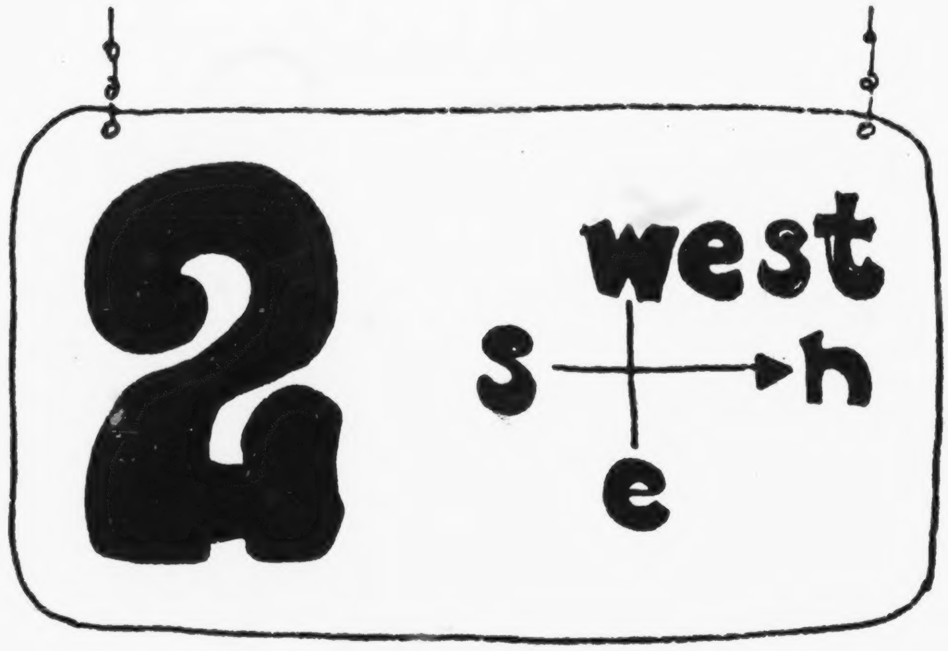
Note: "crawl-through" in ramp can demonstrate relation of levels

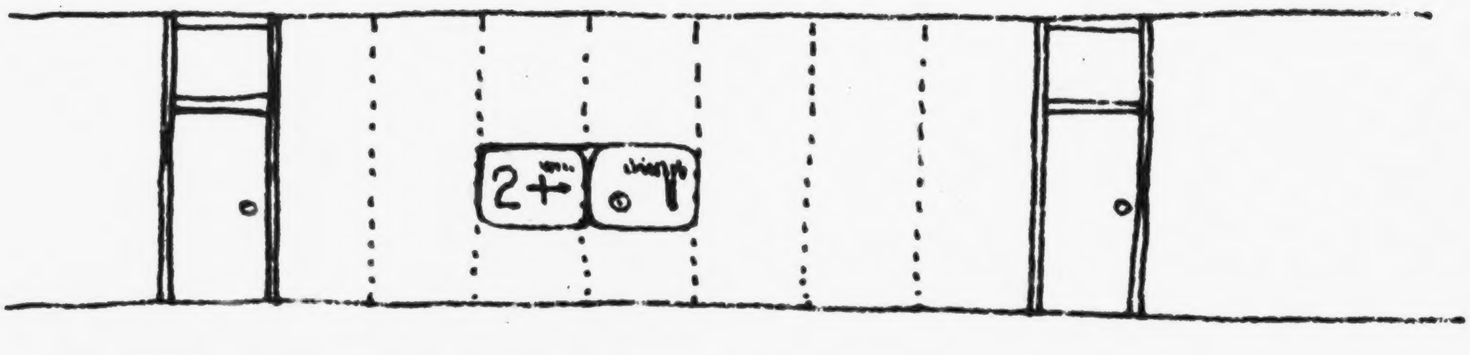
Figure 5-17

A modular sign pattern, with prefinished board of differing sizes, could be hung by predrilled holes on hooks fixed into both the walls and the ceilings. The wall signs could be opaque while the hanging signs could be made of transparent plexiglas. The signs would indicate room or function or direction as needed. (Figure 5-18) More than one sign could be combined; when the need for change in room function or direction was required, other signs could replace these, or be exchanged for those in reciprocal areas. This would prevent the unsightly sign-upon-sign so often seen in schools where changing room functions is common.

Many types of conventional signs can be totally eliminated. Bathrooms, for example, can be indicated by a constant color for boys or girls, by a special template fitted to the doorknob (Figure 5-19) , or by a push plate in a characteristic color.

This is not to say that some verbal indicators should not be permanent. No one ever moves a pool or a gymnasium or a staircase, for instance; but the visual indicator of these spaces, though permanent, need not be conventional. (Figure 5-20) And, in planning these, it is important to relate the color to the space indicated. A blue sign indicating a pool is appropriate; a red sign would be an inaccurate abstraction. Similarly, an indicator must also relate to the function. Swimming, for instance, creates movement of water; the sign can indicate this by picturing waves as well as words. (Figure 5-21) Finally, a permanent indicator must also relate to the place on which it occurs. In color, it must relate as part of the overall color scheme; it can also relate to the material on which it is applied. In the First Facility, it can be created of the module of the block, once again emphasizing the abstract concept of the numbers. (Figure 5-12)





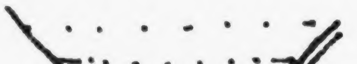
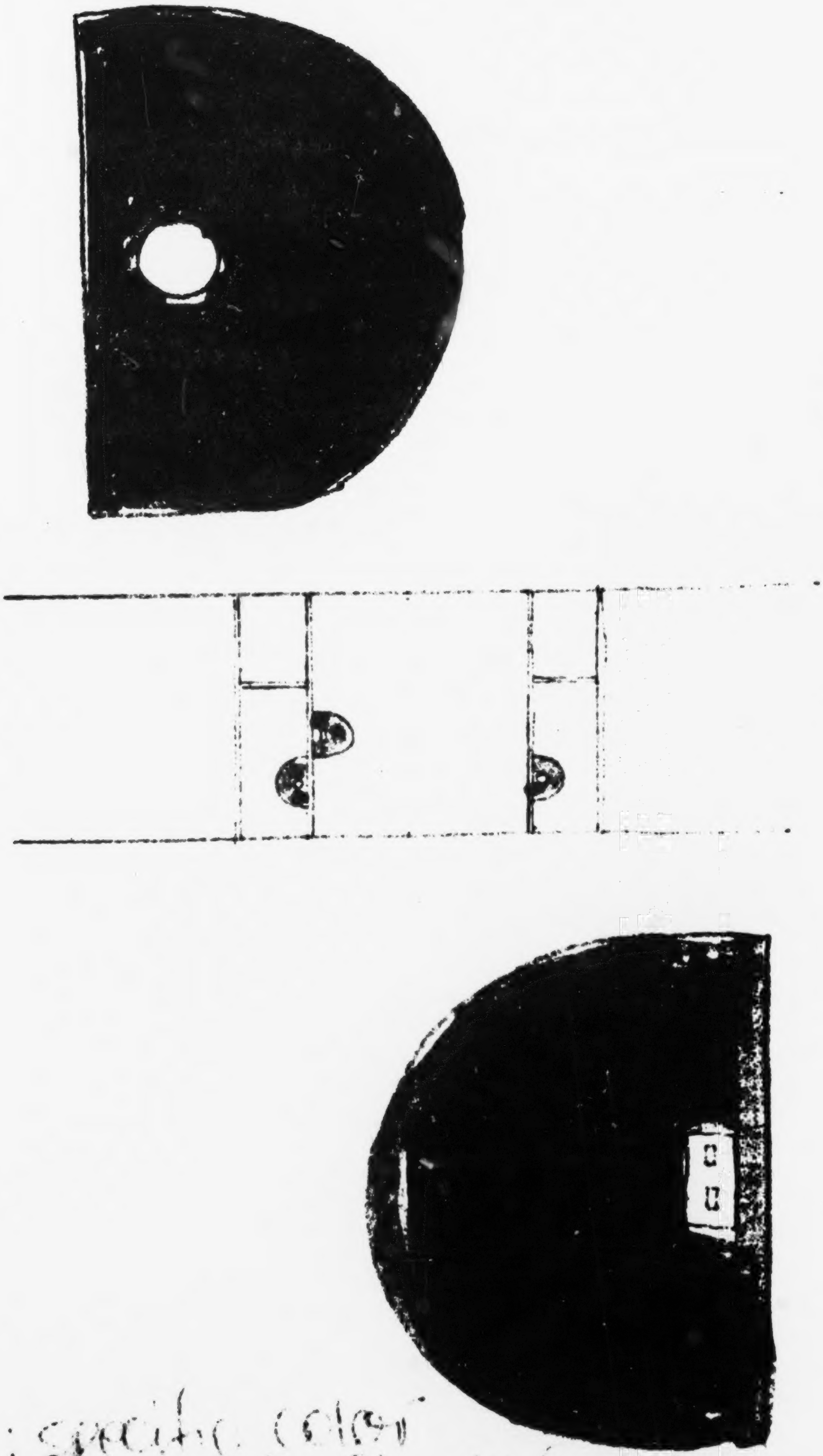


Figure 5-18



Note: specific color
templates can indicate [illegible]
as for [illegible]

Figure 5-19

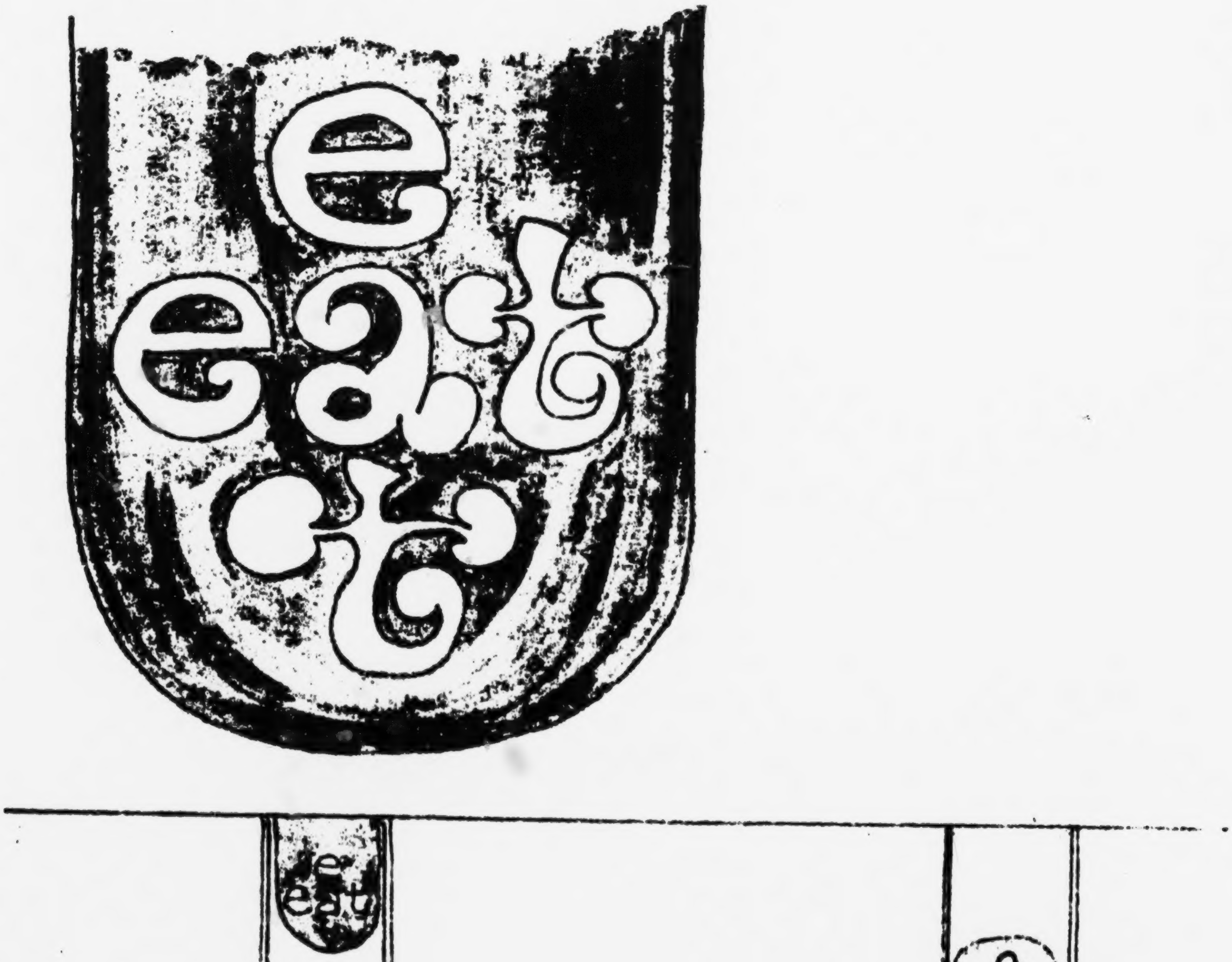


Figure 5- 20

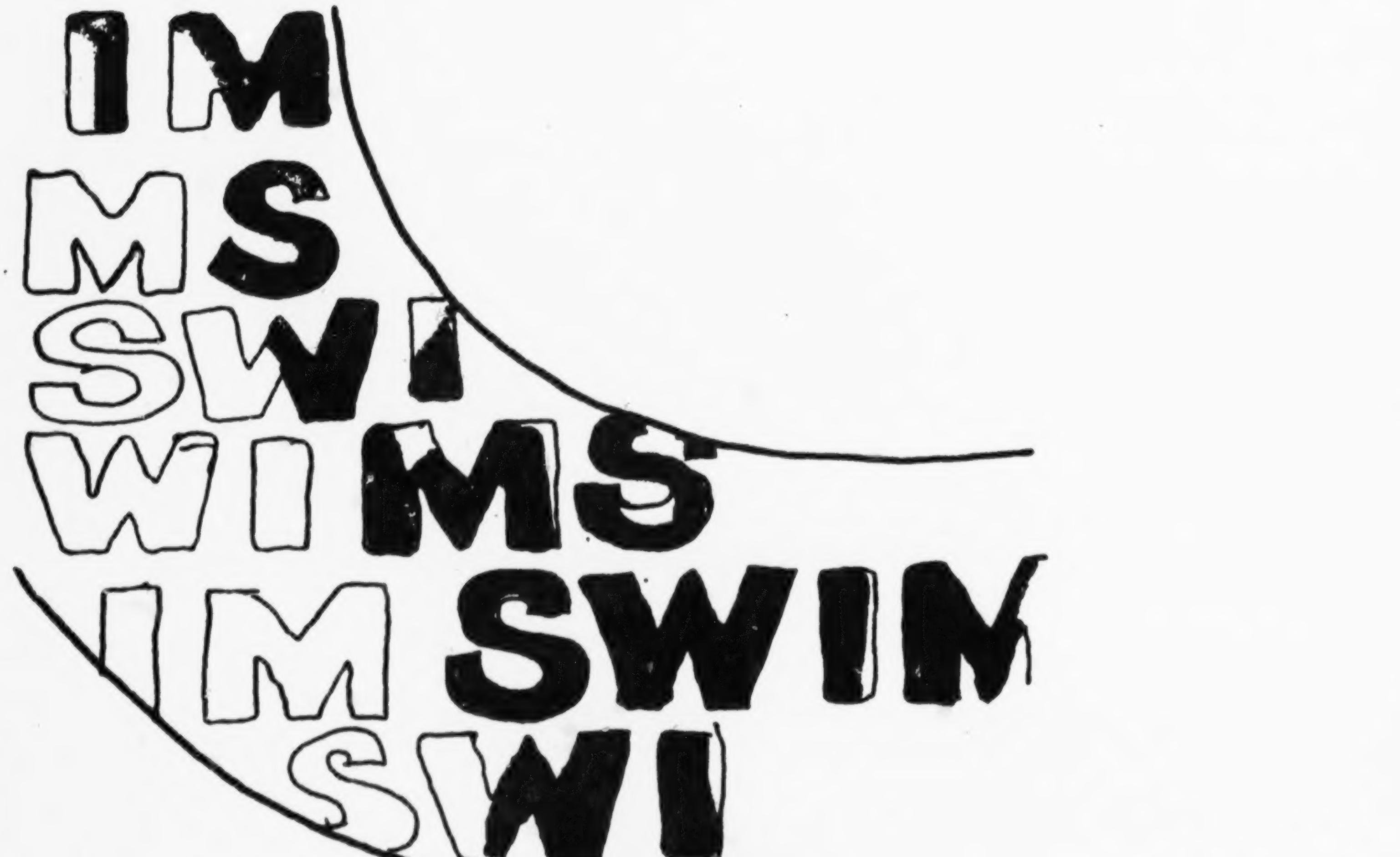

IM
MS
SWI
WIMS
IMSWIM
SWI

Figure 5-21

5.3.2 Graphic Software

Graphic software items can also be roughly divided into two groups: those included in an interior design contract and those purchased as equipment. Both groups can be characterized as temporary, flexible or variable.

Those included in the graphics contract can readily be identified in relation to the performance requirements of the age group they serve.

Children aged 3-5 have a basic need to explore, coupled with a high level of physical activity. A graphic environment rich in variety, color, and content can be developed so that the nonreader can make his way easily about the school. The entire graphics program should be flexible and rotatable. Mirrors, for example, can be fitted into the modular pattern of either the concerte block walls or the demonstrable partitions. Mirrors can show reflectivity; concave and convex mirrors can be educational while also being fun.

Magnetic chalkboard can be an important element in the graphics program. A large assortment of accessories can make these magnetized surfaces into meaningful graphics: magnets in different sizes or shapes to manipulate into changing patterns, sheet or magnetized paper for instant collages, three-dimensional magnets to illustrate abstract relationships of space. "Chalk," made of water soluble magic markers, can be used as paint brushes on these surfaces as well, and animation can be projected, making use of them as screens, with slide or movie projectors.

Other modular equipment, in the form of interlocking cubes for example, can be used to relate floor to ceiling in early stages. In the First Facility, where the ceilings are eleven feet high, it would be a very easy learning experience to teach a child that by a given module he can progress from being "three to five" to being "five to seven" or even "seven to nine" or "nine to twelve." (Figure 5-22) For the young reader in the next group, aged 5-6, a more structured and sophisticated environment is needed. These children are capable of longer attention spans, and the need to integrate numerical exercises with reading lessons can be aided and abetted by the graphics program devised.

The modular partition system, for example, can be used as it is with the younger group, but its scope greatly enlarged. Magnetic shapes can be used as map-making devices to show far-away places or even to show how the school itself is designed with interrelating areas which can be easily transferred into lessons in spatial relationships. Increased participation by the children in using slide techniques to make color and shape changes can be an important lesson in learning color values.

Directional graphics within these areas can be made by the children themselves, attached to magnetic surfaces and hung from pre-fixed hooks in the ceiling. (Figure 5-18) Furniture for each group should, of course, be scaled to size. But because of the modular units, high and low groups can be created; they must still be flexible enough to be easily rearranged into new patterns of function and color by the children themselves, relating to the other modular concepts of the building in both scale and color. A cube which can be both a chair and a table can become a much more complex environment through the easy grouping of many such cubes. (Figure 5-23)

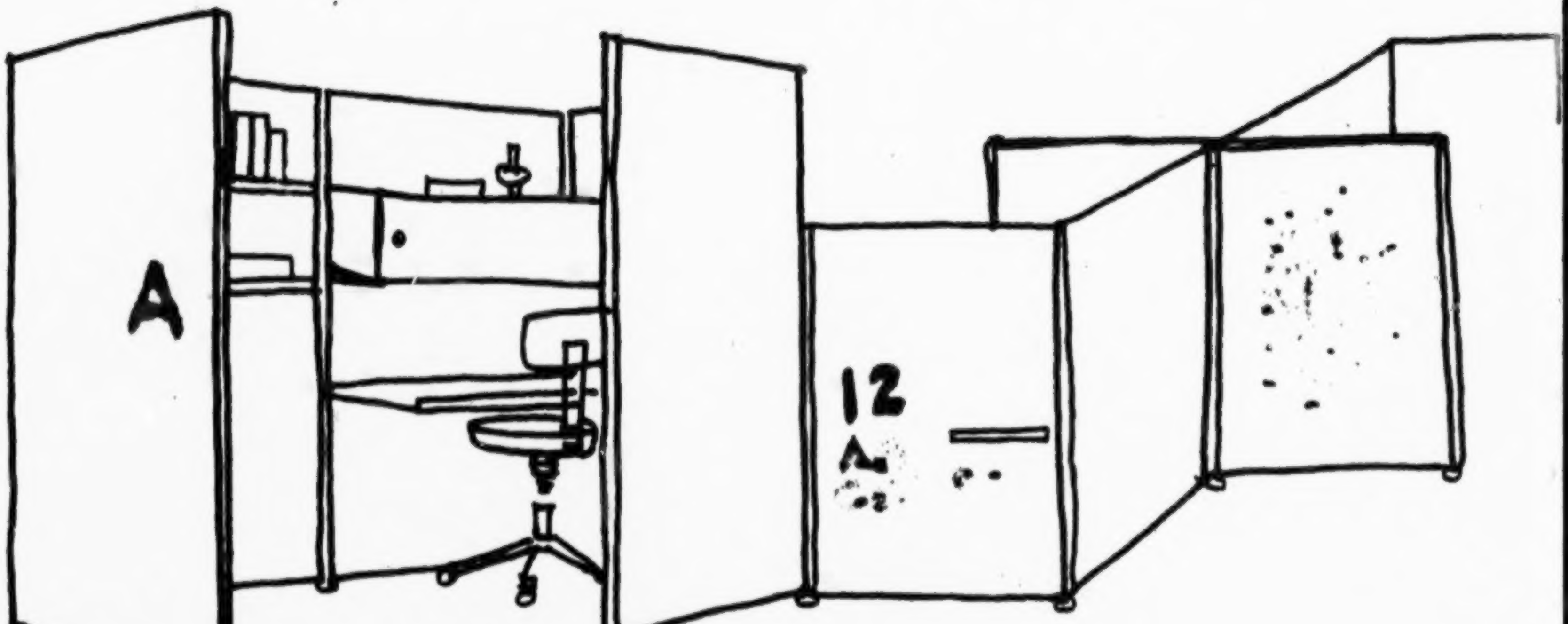


Figure 5-22

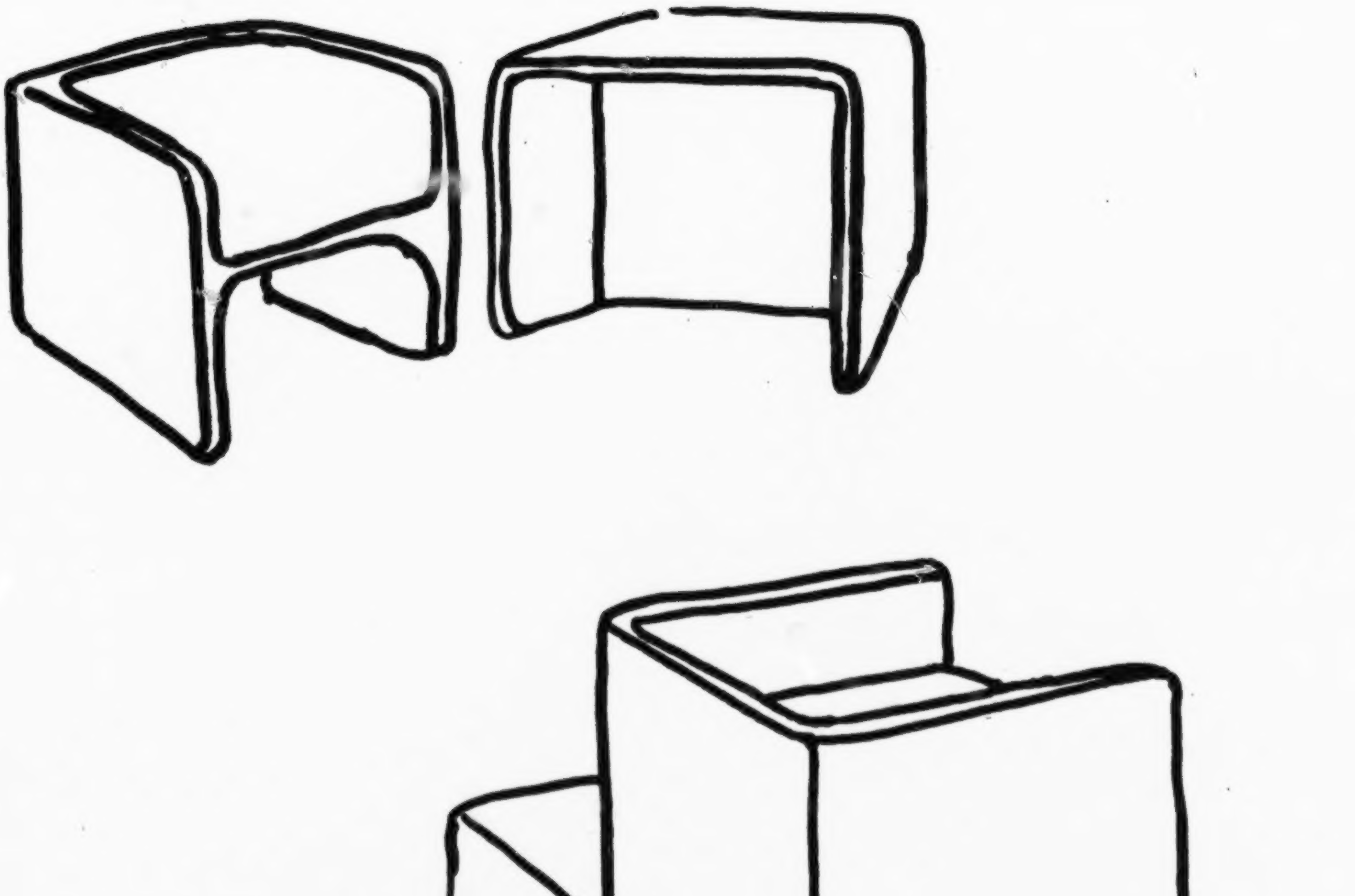


Figure 5-23

For children from 7 to 12, arithmetic and discipline can be stressed to develop a numerical sense and a concept of probability and statistics by the whole physical structure of the learning spaces.

The three-dimensional qualities of much of the equipment, from the modular partitions to the concrete block construction to the tables and chairs themselves, lend themselves to geometric and algebraic expressions. The partition system, based on a ten-foot module, for example, can incorporate its own modular properties in storage, carrels, and display systems. Tracks in the ceilings allow panels to be hung at right angles to walls (Figure 5-24) to illustrate divisions in three dimensions, and rods inserted into the slotted standards on the concrete block walls can be fitted to extend still another dimension in space.

Increased student participation in the design and execution of graphics can help develop a more refined sense of space and environment as well. In the all-purpose "music room," students could practice projecting their own feelings about space. Working in teams with projections, paints, collage papers or any medium, they could totally change the "space concept" on walls purposely left unadorned.

School displays relating subject matter to the community needs or to subjects under study could be another project program for the older children. shelves or display cases of various materials modularized for the 4' spacing of standards should be used. Stencils using letter or number cut-outs could be provided for this group, allowing them to rearrange or redesignate spaces as they wish within their own learning areas as well as to illustrate the concepts they are studying.

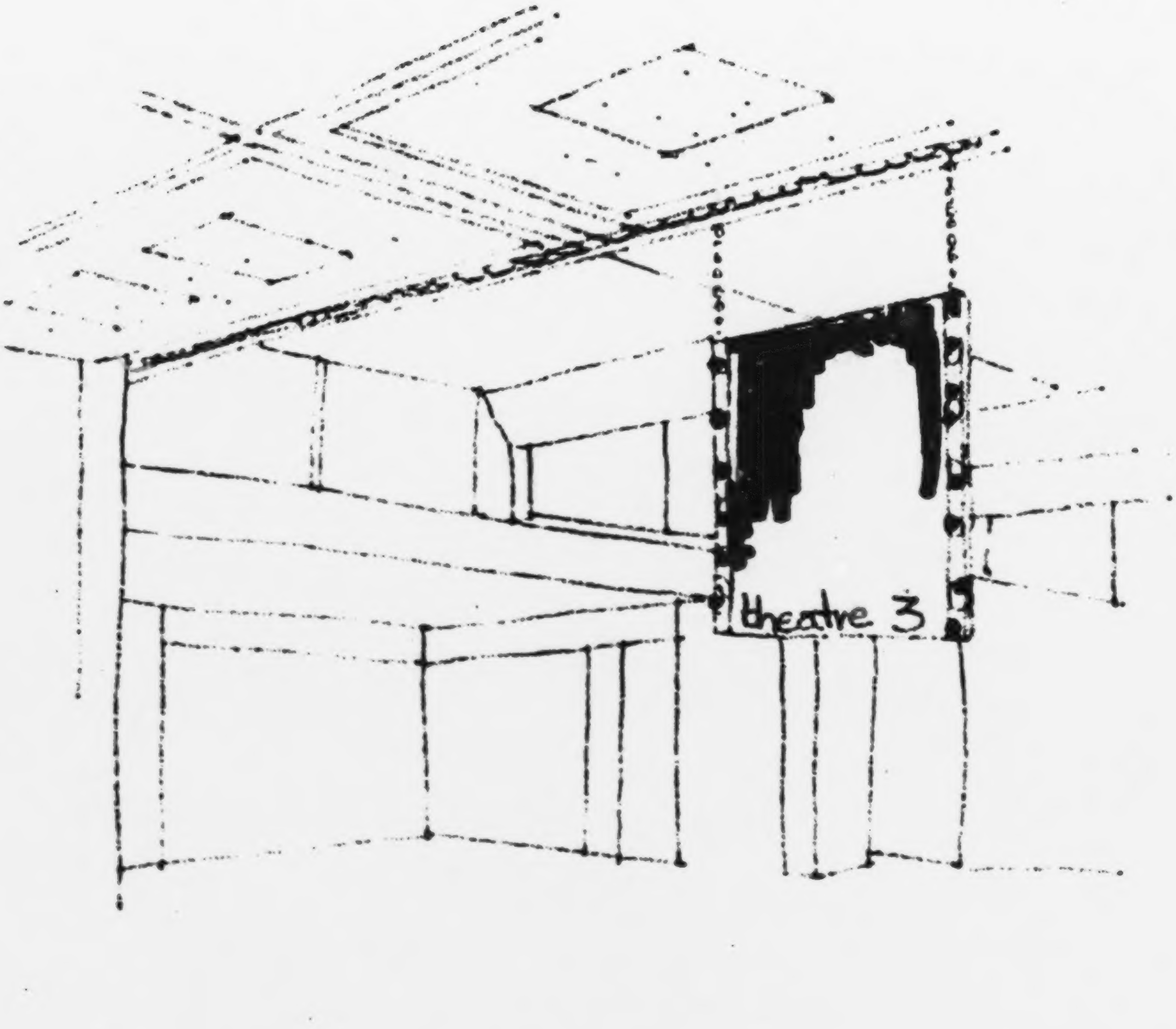


Figure 5-24

5.3.3 Color

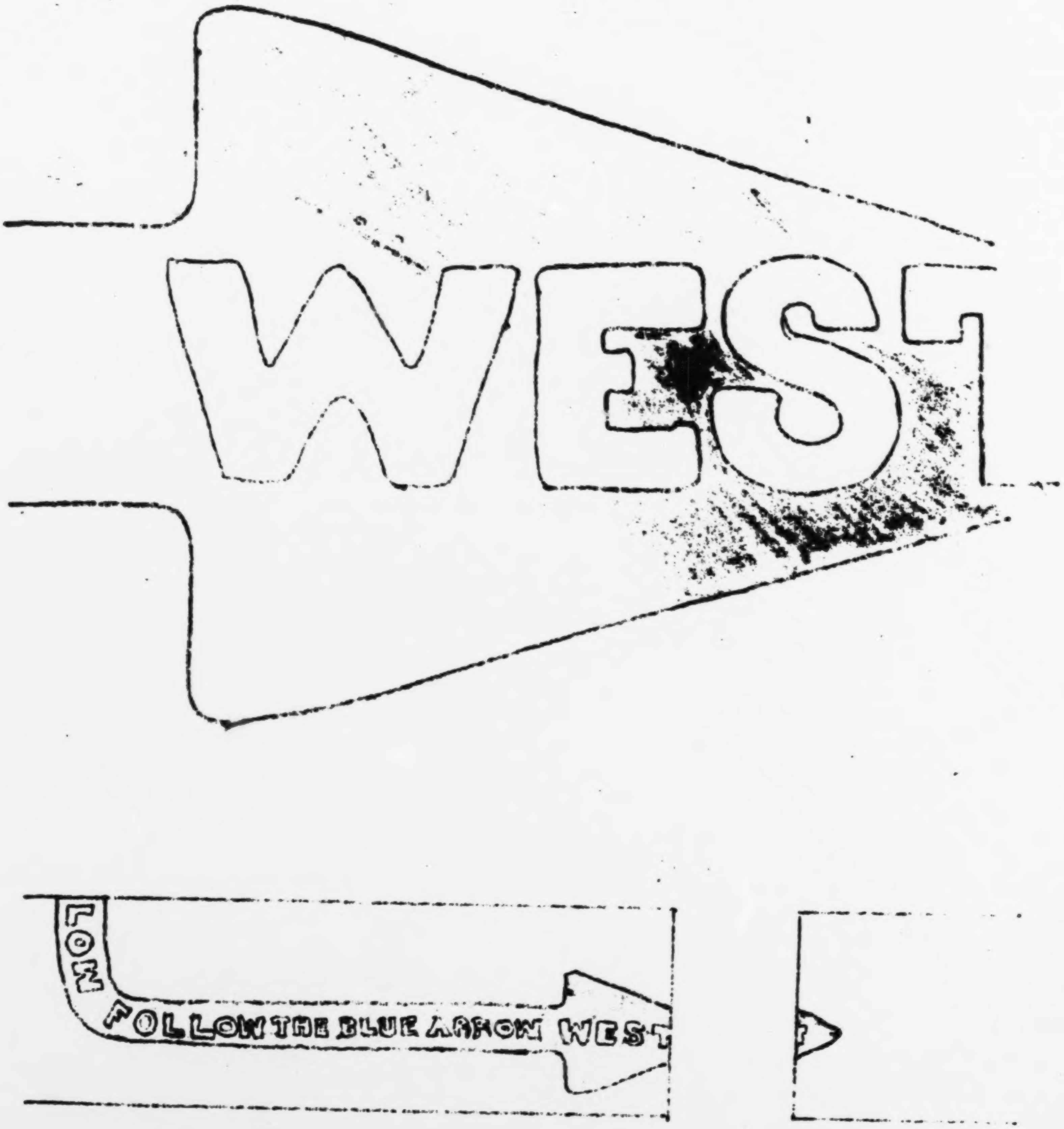
In any school, color is an integral and vital part of the graphics program. It is related to the overall graphic concept in three general areas: function, finish,and furnishings -- the three "f's" of the graphic panorama.

Function is the heart of any graphic concept. Color can be related to the physical sections of the building by being used in its relation to an East-West axis. For instance, the East Section of the First Facility is red and the West Section is blue. In accompanying signs, then, these key colors are repeated, showing where you are and how to get there. These colors relate to an East-West axis. (Figure 5-25)

Color continuity can be a guiding factor in location in other ways. Certain colors, for example, can always denote function, such as red meaning exit. In the First Facility, each age group has its own characteristic set of colors, but the connections between age groups can provide color continuity in a common color used for floors or non-accent walls.

Colors can be used to indicate function. A stairwell cutting through two levels can be designated by its color, as can a special function space such as a pool or gymnasium.

Color in relation to finish can also provide a meaningful experience in the daily routine of a child. Texture -- or the lack of it -- can be accentuated by color; the roughness of a concrete block painted bright blue for instance, contrasted with the smooth cool whiteness of a metal partition can be a pleasant sight for a small child. Similarly, color properly coordinated to material finishes can


WEST
LOW
FOLLOW THE BLUE ARROW WEST

Note: color code for east-west axis can continue around corners

Figure 5-25

create the optimum environment for young eyes. If colors are specified so that equipment is integrated with the color of the finishes in the construction contract, a genuine color pattern can be created -- and instantly recognized by the child.

In the same way, color choices in furnishings must be related to the color code of the school. Lockers, partitions, chairs, tables -- all these must have their own predetermined place in the school, carrying to still another degree the implicit graphic lessons involved.

Graphics should be flexibly planned so that they can all be used by more than one age group. They can be color coded in order to enhance the manipulation of space. Finally, they must be considered as an essential part of the modern school environment.

5.4 Equipment

A wide variety of equipment is needed to create study, recreation, conference, and other areas within the large open areas of the four stages in the First Facility. This equipment includes the following categories:

- Rolling equipment including cabinets, lockers, partitions, space dividers, chalk and magnetic boards and screens, and wardrobes.
- Other movable equipment including desks, chairs, stools, and tables, etc.
- Equipment for science, art, and home economics projects including work benches, easels, sinks, and stoves.
- Wall brackets, standards, and shelves.
- Magnetic accessories including magnetic maps with magnetic makers, magnetic signs, symbols and letters for the magnetic wall surfaces, and magnetic tapes and sheets.

The use of many individual pieces of the flexible equipment (the desk-chair cube and the wall brackets, for instance) has been described in detail earlier in the report. However, it is necessary to emphasize again that teachers must continually form new spatial arrangements according to the activities and interests of the students. If the equipment is not altered as the users' needs change, the students will not consider the space itself as a component for exploration and learning and the facility will become similar to the traditional, rigid, and conventional school.

Second, the teachers also must consider all the equipment in relation to the other components and create activity areas using many different types of equipment in order to explore the full potential of the individual units. For instance, a project alcove with a sink could be used one day by three students exploring the properties of liquids such as water, oil, and ethyl alcohol. The alcove would be enclosed with a water table for experiments and magnetic partition for displays. The next day the alcove could be opened up and a screen could be put behind the sink enabling a teacher to show slides or a film and conduct basic experiments in the sink at the same time. Fifteen or twenty students could bring their cube chairs to the alcove, watch the slides, and help the teacher with the experiments.

Much of the equipment can be combined with the other equipment in the facility. Individual wall brackets, for instance, can be used to hold clocks, pencil sharpeners, flag holders, etc. Two brackets can be used to display paintings and maps as well as to store a series of drawings one behind another. Brackets containing a series of drawings can be used for a classroom presentation in conjunction with a screen for slides or water tables for experiments.

Several equipment manufacturers have been recommended by General Learning because their products have been designed for the "open space" school or lend themselves to the manipulation of space. The list is not preferential. If equivalent products produced by other firms are available, they may be substituted for the recommended products.

Company	Product
Grade-Aid Corporation 46 Bridge Street Nashua, New Hampshire 03060	Rolling Storage Units including cabinets with tote trays, shelves, and storage and display areas.
Hauserman Company 5711 Grant Avenue Cleveland, Ohio 44105	Carrels (Since the company's demountable partitions have been specified for the facility, the use of matching Hauserman carrels would contribute to the overall unity of the interior.)
Granite Mills Salt Lake City, Utah	Rolling teacher's wardrobes
Monsanto Chemical Company St. Louis, Missouri	"Educube" (desk-chair unit)
General Fireproofing Company Youngstown, Ohio 44501	Stacking chairs
Educators Manufacturing Company 3401 Lincoln Avenue Tacoma, Washington 98401	"Innovator" line including laboratory sinks, project tables, and storage cabinets
Karlis Cambridge, Massachusetts	Student storage cubicles

The alternate desk-chair unit described earlier in the report is currently being developed by two competing manufacturers and being tested in the Jefferson County school district in Colorado. The manufacturers are:

Design Product, Inc.
2950 Walnut Street
Bolder, Colorado
(Mr. Beavers in charge)

American School Supply
2301 Blake
Denver, Colorado
(Mr. French in charge)

5.5 Exterior Environment

One goal for the Fort Lincoln education system is that the learning environment not be limited to a single physical structure, but expanded to include the immediate surroundings, the community, and the city. The school staff and the students must draw upon the resources of the new town, the 335-acre site, the surrounding communities in Northeast Washington, and metropolitan Washington as a whole.

The exterior environment of the First Facility, the outside of the building as well as the entire 335-acre site, offers unlimited possibilities for learning. Many projects and studies conducted outside should be incorporated into the regular academic courses such as science and mathematics; others can be used for separate studies in ecology.

Recommendations for two areas, the outdoor play area and the roof area, are presented. Activities in these areas ought to be redefined and reinterpreted continually by the school staff and students to meet existing needs and interests.

The following recommendations were prepared by the Environment Science Center of Golden Valley, Minnesota. The Center, under the direction of B. B. Clark, C. E. Vogt and M. J. Naylon, is funded by the U. S. Office of Education. The entire text is included in the Appendix B.

5.5.1 Outdoor Play Areas

For young children, emphasis is on school on the one hand and on family and the "home and shelter" concept on the other. Provision should be made in the outdoor play area for structures which could represent home and shelter.

One structure might conform to the square or rectilinear nature of traditional structures. Another could be curved, domed, or cylindrical.

5.5.2 Roof Areas

Wall and roof surfaces near the planetarium could be used to reinforce the concept of size, distance, and even the universe through graphic representations of the solar system and the planets.

A solar activity area enclosed by vertical, translucent panels allowing sunlight to pass through could be used for several purposes. In science classes, maps of solar movement could be made and calculations of the angle of light as the sun moves could be measured by tracking lines of light in the plastic panels. The area also could be used for dramatic presentations as well as classroom space.

A microclimate planter is designed as a science resource center for the study of microclimate and solar orientation in relation to plant growth. It is placed on wheels and has a changeable angle to permit slope severity studies and North-South orientation. The planter has been compartmentalized to decrease soil erosion and allow space for a number of different plants.

Additional plants and vegetation can be grown in the planters on the edge of the roof. These plants could be used by science classes and provide materials such as seeds for a seed mosaic or serve as models for sketches or paintings for art classes.

A large stream box containing sand, gravel, and water could also be designed for the roof. The effects of wind and rain can be examined in the sand. The water source can be used to create steam for a variety of experiments. Dams, artificial barriers, and miniatures (such as one of the Anacostia River Valley) can be constructed to explore how moving water affects the landscape.

The air-conditioning unit can be used to study heating, cooling, and condensation. Similarly, other functional units throughout the building could be used for instructional purposes.

Finally, the open areas on the roof could be used for study, work projects, and experiments. For instance, children could measure air pollution and pollen dispersion of airborne algae and fungus spores by setting up petroleum jelly-covered slides and checking regularly for algae and fungus growth. Or, wind and turbulence patterns on the corners of the roof could be studied and mapped on graph paper.

5.6 Implementation

Setting up a facility designed around the most innovative ideas in education and architecture is a difficult job. Coordination between parts is essential during the implementation stage and after the building is in use.

New equipment and materials compatible with the education system and building design have been specified. A change in any one component, either in the building design or in the equipment, could necessitate changes in the other components. For instance, the flexible, open plan for the three stages of the First Facility demand the use of carrels and demountable partitions to divide up the space. If the compatibility between the building and the equipment is not maintained, if the carrels are not used, flexibility and the success of the facility will be sharply reduced.

Implementation should be directed by a group of individuals of different professions. The group could become a permanent committee for all other Fort Lincoln School facilities. It should establish and maintain contact with suppliers to purchase special equipment. The group could be in a position to effect the design and development of new products and new procedures for the open space schools of the future.

When the facility is completed, the maintenance staff will have to continue the activities initiated by the above group. The concept that a facility can be maintained daily by the users requires an innovative attitude on the part of maintenance staff.

The implementation staff should include: a designer to help the teachers and students create new and varied space configurations; a facilitator to advise the school population about what equipment is available and how to obtain it; and a member who is mechanically oriented to construct the partitions systems. Above all, all of the staff must be eager to work with the staff and children so that the physical aspects of the facility continue to be used as educational tools!

APPENDIX A

REQUIREMENTS FOR A RANDOM-ACCESS COMMUNICATIONS SYSTEM

Requirements for a Random-Access Communications System*

Communication systems serving modern day school needs have evolved in many ways, partially reflecting public and pedagogical considerations of long standing and otherwise utilizing technical innovations which have characterized communication developments in recent years. A paradoxical observation is made, however, that the subject systems are not immediately associated with a communication process. This is certainly true of hourly program bells, fire alarms and auditorium amplifier systems required in most school buildings. It continues to apply to systems involved with new technology and thereby subject to tagging with catchword terminology, as is the case with computer assisted instruction (CAI). The effect is a continued tendency to treat all systems independently, not recognizing common relationships, and thereby discouraging either systems combination or common installation criteria.

The various communication systems slated for FLNT Elementary School No. 1, either in initial facility implementation or as the result of later feasible additions, are identified in the following breakdown treating system designation, functional characteristics and extent of installation:

System Designation	Functional Characteristics or Method of Operation	Component Locations and System Boundaries
Program Bell	provides an attention dominating signal to school attendees concerned with class congregating deadlines and with start and close of lesson periods. Typically operates from clock associated series of bands or mechanical tapes preset to class schedules	central bell timing mechanism in admin. office area with low voltage signals routed to bells in learning areas, offices, corridors and playgrounds. Note - existing plans and specifications do not appear to reflect the latter areas.
Clock Synchronization	provides a periodic correction for all clocks - may be integrated with program bell system	central master clock transmits brief time correction impulses to clocks in learning areas and offices.
Fire Alarm	provides an immediate, continuing, loudly resonant gong alarm within and outside the school building when striking stations or detector circuits are activated	striking stations throughout the building - in large learning areas, offices, vestibules, stair landings, special purpose rooms including boiler room,

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* Designed by Zigmund V. Grobowski, of Grobowski and Associates, Washington, D. C.

		air handling equipment, dark room etc. Detectors located in similar numerous and widespread areas. Annunciator panels located at or near main entrance and at admin. office with reset of system at latter location
Security Alarm	provides an immediate alarm sounding outside the building and/or at selected inside locations and/or relayed to a distant monitoring point	existing junction box locations for sensing devices are at numerous stairs locations. Inside locations for monitoring are suggested as admin. offices and custodial office. Distant relay suggested as leased telephone line, automatically alarm-programmed.
Public Address	provides administrative "broadcast" announcements and periodic important information to the entire school interior from administrative offices or from auditorium/ large group congregating areas - in the latter case serving to extend the audience	centralized control and low level audio distribution originating at administrative office. Higher level amplifiers located in various areas throughout the school (in equipment boxes or at stage positions. In latter case, amplifiers may be accompanied by mixer-preamplifier units to feed back to the admin. office for centralized distribution or to feed directly into the higher level amplifiers). Amplifier equipment may be of uniform design except for units feeding large horn speakers as in the auditorium
Sound Reinforcement	provides compensation for sound losses, with some additional amplification as well, associated with audience distance from staging areas in larger congregating areas	non-centralized control, with low level preamplifiers and mixers located at or near large congregating areas (not necessarily at staging positions). Higher

		level amplifiers and associated speakers are generally those also associated with public address systems.
Intercommunications	provides two wav or conference communications for stations within administrative zones or, upon supervisory control, between any pair of stations within the school. Communications may involve privacy (as with hand held "telephone" type instrument) at either station or, alternately, cluster speaking and listening (as through speaker/microphone) at either station. With proper engineering specification, system may also provide "patch" or connection controls permitting access of intercom units and/or adjacent speakers to standard program sources routed thru the school.	Equipment and locations are divided into two categories - associated with control and classroom type stations. The former are generally limited in number (8 to 12) and used by the admin. office, curricula or section heads and special purpose areas - cafeteria, recreation, custodial etc. - to call and communicate with each other as well as with classroom stations associated with the section or special purpose area. The administrative office, through its station, may preempt all communications taking place in the school. Classroom stations in a section or special purpose area may call and communicate with each other, or with proper administrative control, with any classroom or control station in the school. Classroom stations are accompanied by an adjacent loudspeaker-microphone unit or units (with amplifier) permitting transfer of conversation to groups too numerous or distant to be confined to using a hand held instrument.
Paging	provides a locating or calling facility from administrative offices - may be readily combined with intercom systems	locations are predominantly associated with corridors, recreation spaces, lounges and outdoor areas as differentiated from intercom stations. Note - present planning reflects "paging" in certain buzzer systems only.

Background Music	provides mood and informality to community groups congregating within the school	Music provided through FM tuner or long-play cassette playback system (up to 10 hours per cassette), at administrative offices. Spaces to which music is distributed may be governed by centralized control (as for public address system functions) or by intercom access, selectively but without restriction, at various classroom stations. Music is provided by speakers associated or controlled by such stations,
Background Noise	provides relative isolation and an environmental incentive to gather more closely and to "speak up" to discussion groups or clusters not too distant from other groups	Source of "white noise" may be a test-type generator used in testing audio systems, an adaptation of such generator providing shaped or recurrent patterns of volume, or a specially recorded long-play cassette. Control may be similar to that provided for background music.
Closed Circuit TV	provides educational and selected commercial broadcast TV material to learning and community spaces. Also provides for the distribution of locally produced TV material (with TV cameras and/or videotape recording) to such spaces. In more advanced versions, may provide the facility to "project" movie film, film-strip and film-slides on TV receivers in lieu of screens.	Equipment locations involve antennas and mast on the roof, a first "head-end" cabinet containing certain amplifier/ converter equipment near the roof location and a second "head-end" cabinet containing certain modulator/amplifier/ converter equipment at the administrative area or suitable centralized TV production area. Classroom and learning space terminations must accomodate not only receivers but connections from cameras/videotape recorders. In advanced versions, centralized production spaces are made larger to provide camera-

		film projector multiplexing facilities.
Local A-V	provides convenient or remote operation or combined use of certain A-V equipment in localized but nevertheless traffic-laden learning areas	only termination facilities and intermediate routing in the individual areas are usually provided. These may be "tailored" for certain areas, such as language labs or resource centers, wherein A-V concepts are specifically formulated. They may be casually or uniformly provided in other areas with an expectation that A-V processes will partially adapt to such terminations and routing.
Computer Assisted Instruction (CAI)	provides access and readout to learning space stations from centralized retrieval sources and processing equipment.	terminal equipment and routing concepts are partly related to those utilized for CCTV, in the case of certain types of systems. Terminal equipment locations may be more numerous depending on degree of individualized instruction.

From the above breakdown, it may be noted that certain duplication of equipment or its function, as well as routing, is invited when systems are separately and independently specified. It further indicates that certain systems may be combined,with evolvement being based on selection of those systems which may be a common nucleus to others.

Analysis of the above systems indicates that two of "master" or nucleus type should dominate specification endeavours, with most other systems being adapted to become contributory or to be heavily dependent on one of the two. To a certain degree, the two "master" systems may also overlap in some respects, as in specifying common conduit or duct in certain areas or in establishing overall "communications" terminal boxes and plates at various locations. The "master" systems involved are those primarily identified with Intercommunications and with Closed Circuit TV.

The reason for selection of the Intercommunications system as the backbone for certain systems is involved with the following factors -

1. Organizational grading of equipment into types and functions matching closely school organizational needs.
2. Wider spread routing and flexibility, including two way routing provisions, compared to any of the other "audio" systems.

3. Associated routing of certain control voltages, common to Intercommunication systems, permitting the "borrowing" of such control voltages to activate other systems properly adapted for control.

4. Greater use of multiconductor cable associated with this type of system - usually providing spare circuits.

5. Observations that of all types of "audio" systems, the Intercommunications System constantly leads all others in expanding functional concepts and developing new and more flexible equipment to match such concepts. This has been evident for some years.

The selection of the Closed Circuit TV system as the backbone for other categories of system is less decisive. It involves a recognition that "video" channels common to TV distribution are likely to be relied upon in transmission of Computer Assisted Instruction, especially in future systems. It also anticipates that for certain systems such as those for Security, central monitoring systems not confined to one school but to groups of schools may be in order. TV techniques for detection are already in use elsewhere - the relay of such detection information within any school or to a further monitoring point may be again undertaken through "video" channels and routing techniques common to CCTV.

In the case of FLNT Elementary School No. 1, the division of systems into various categories dominated by a "master" system is treated as follows (it may be noted that some systems should remain independent for various reasons and such systems are also identified):

Audio and Impulse Control - - - - - Intercommunicatinns System as backbone

Program Bell
Clock Synchronization
Public Address
Sound Reinforcement
Intercommunications
Paging
Background Music
Background Noise

Video - - - - - Closed Circuit TV System as backbone

Closed Circuit TV
Computer Assisted Instruction - when planned
Security - future and not presently planned system

Independent Systems

Fire Alarm - because of distinctive departure in routing to closets, air handling spaces, boiler room and stair locations - not common to any other systems. Also because of an implied requirement to not disturb any portion of this safety - associated system during maintenance or installation involving other systems. Note - present plans for fire alarm system distribution are indistinct and may be based on partial sharing of "signal" ducts prevalent in various areas. If the latter is the case - D. C. Schools authorities may require further change.

Local A-V	-	because these are limited routings confined to certain large areas or special purpose spaces, such as the library-resources center. The routings are furthermore not interlinked but remain independent - involving no more than empty conduit or duct availability and access plate mountings in comprehensive specifications.
Security	-	present system appears to be embryonic in concept and thus to be flexibly developed involving techniques which are not projected to rely on television. Furthermore, present systems seem to be based only on empty conduit - completely separate from other duct or conduit. Locations, primarily at stairs, do not approach those associated with other systems and thus, in total, the present system is not adaptable to integration or association with other systems.

Note - The categorization of the above systems does not infer that the systems should not be recognized in the event that specifications are developed for a single category. As an example, conduit, duct and terminal plate locations and adequacy for Closed Circuit TV should be considered when drawing up Audio specifications heavily dependent on Intercommunications System design.

The development of comprehensive specifications for Audio and Impulse Control systems based on skeletonization about an Intercommunication system should be traced to requirements associated with various audio system functions and standards of performance. As greatly as possible, they shall evolve about Intercom system equipment and ties to such equipment, if only because of the flexibility and random-access involved (Note - the term random-access is characteristic of a number of Intercom system designs and is not meant to favor any single manufacturer design). Such requirements include the following:

1. System functional characteristics associated with individual system design should not be compromised by incorporating such functions into a comprehensive design.
2. Single contractor responsibility for the supply and installation of a comprehensive system shall be favored - with necessary assurance of spares and maintenance stocking and availability.
3. Specifications shall be divided into component parts as follows:

   specifications for a complete empty conduit and duct system matching completed system requirements. Such specifications may permit an electrical or construction contractor to install distribution conduit and duct prior to the involvement of a systems contractor. Because of involvement with construction, such conduit and duct system specifications are to remain a responsibility of the architect-engineer for FLNT Elementary School No. 1, with system specifications (pertinent to a comprehensive system) becoming contributory requirements, in effect, for the conduit/duct specifications.

specifications for certain in-place-with-construction systems for which the architect-engineer bears responsibility. Such specifications are of limited nature, largely involving fire alarm, program bell and clock systems. (Sound reinforcing, background music and background noise systems of limited extent presently undertaken by the architect-engineer in specifications are not necessarily a responsibility but were assumed as such). Specification development in such case involves an addition and further improvement on those presently existing. In the case of program bell and clock systems, if these are affected by comprehensive specifications, even in part, optional specifications will need to be undertaken - reflecting partial systems to be installed awaiting completion of more comprehensive installations of completed systems. The architect-engineer and D. C. Schools building agencies must then choose proper options in bid returns - not necessarily based on price but on late-minute promise of comprehensive system implementation (if promise does not develop, the only option involves independent systems).

specifications for after-construction systems. These are the bulk of comprehensive system specifications. Their late identification herein should not imply last priority. Instead they should be undertaken first, as possible, to influence the earlier companion specifications to which they are related. The single or overall system contractor becomes involved as a result of procurement associated with this portion of specifications.

4. In keeping with requirement no. 1 above, performance characteristics associated with sound reinforcement, background music etc. systems presently specified to limited extent should be examined and maintained, as merited, in any comprehensive system specifications. Such characteristics should be those identified with power levels, distortion and noise figures, response etc. They should not be confused with physical operating circumstances such as reliance on amplifier and turntable equipment carts etc.

5. The basic concept of the comprehensive system involves random access of learning spaces to any of the following -

    certain program sources maintained at central or reference locations

    conference discussions with other learning spaces

    private discussions with other learning spaces and centers as well as with administrative centers.

The comprehensive system also involves random access of administrative (and learning) centers to various learning spaces in the following ways -

    monitoring of any learning space - simultaneously sounding an intermittent beep signal at the learning space

    conference discussions with other learning centers and admin. areas.

group calls to various learning spaces from a learning center or from the administrative center - exttending, in the latter case, to a "group" address to the entire school

6. Access of the learning space to a program source is meant to imply exercise of control at a learning space intercom station - selecting the program, switching it to a handset for preliminary monitoring or to overhead speakers for audience reception - also regulating volume in the process. At least five program sources should be available as follows -

   (a) Central office long-play cassette background music

   (b) Central office long-play cassette "white noise"

   (c) Central office FM or broadcast tuner

   (d) Immediate learning space "lesson audio jack", fed in turn by local record player, cassette recorder, videotape recorder (audio), microphone and pre-amp etc.

   (e) Bridging output from auditorium amplifier (as activated)

   Note - central office administrative announcements are not considered as program sources since the administrative office schedules such announcements and, in effect, pre-empts all program sources.

   program source involving auditorium amplifier is a spare program channel, in a sense, active only when keeping students (or the community) in a learning space to hear auditorium programs due to lack of space at the latter location.

7. In general, augmenting amplifier-loudspeakers for learning space intercom stations may be of standard intercom system variety (ceiling mounted - transistor amplifier (approx 1 to 2 watts) located in loudspeaker backbox) only for those spaces of relatively small size. In larger spaces, the standard intercom amplifier-loudspeakers shall be supplanted by more complex arrangements similar to those being specified for sound reinforcing in large learning areas. The division of speakers should, however, conform as possible to association with individual intercom stations or zones. The added requirements for amplifiers not housed in speaker backboxes dictates addition of equipment cabinets or boxes at critically spaced locations at each building level. Care must be taken, as possible, to isolate loudspeaker conduit runs into two categories - one involved with intermediate levels associated with normal intercom amplifier-loudspeakers while the other is involved with high levels from cabinet mounted amplifiers. In special purpose areas, except for the auditorium wherein horn speakers and separate amplifiers are involved, standard intercom system amplifier-loudspeakers should be deemed adequate - even if required in clusters inviting phasing problems or unequal distribution. This applies to such spaces as

the cafeteria, teachers lounge, health suite and certain pool and recreation areas. (Note - other pool and recreation areas will need additional amplifiers, if only to overcome noise levels.)

8. Channel (b) program source, involving "white noise", shall not be available to smaller learning spaces and to certain special purpose areas - including the cafeteria, pool and recreation areas (the source would be superfluous)

9. Representative types of equipment associated with the "master" or intercom system shall be of minimal types or categories, exemplified by the following -

    central frame equipment including power supplies, switching matrices and control-interlock circuits

    control stations of self-contained compact design, for wall or desk mounting, provided with push-button or rotary dialing to select calls to other stations, to relay or switch through calls from one learning space to another, to select calls to groups or combinations of stations and tomonitor program sources. Annunciator lamps or indicators associated with the control stations are optional.

    learning space or "field" stations of self-contained design or involving two units. In the latter case, a normally wall mounted unit is provided with a handset, five to six selection controls for program sources and a selector/volume control associated with the second unit, a normally ceiling or wall mounted amplifier-speaker combination. In a call position, the latter may also serve as a group "microphone". Outgoing calls normally terminate at a control station administratively associated with the learning space or are routed to other learning spaces through such control station.

10. Peripheral equipment associated with the "master" or intercom system effectively permits other system functions such as identified earlier. Such equipment may be of independent design - including program sources and higher power amplifiers such as associated with larger learning spaces.

11. Though numerous learning space or "field" stations must be specified for Elementary School No. 1, the number of control stations should be restricted to the minimum necessary. The reporting or administrative sequences relating to all learning spaces must be analyzed to correctly specify which stations work with certain control stations. This also applies to special purpose spaces. Certain control stations should be reserved for community and after-hours system functions, when the comprehensive systems need not operate in the same mode as during the school day. It is suggested that key-operated control and "field" stations be activated for such community purposes. This means that certain idle control and "field" stations may be located adjacently to other similar stations used during the school day. The provision of such partially idle equipment is completely justified by the different operations

and system arrangements deemed best during community hours when the same equipment is not idle and particularly utilized.

12. Certain control stations of "permanent circuit" nature may be incorporated into central frame equipment which should occupy space near the school administrative center. As an example, a certain control station of this type may work in conjuntion with the clock system - preempting at selected times all loudspeakers for providing "program bell" sound. Another control station may be associated with relatively "forgotten" elements of the comprehensive system - those of corridor, vestibule and outdoor speakers (not provided with talkback intercom) - necessary at selected times for paging functions.

13. In certain learning spaces, it will be necessary to record group reaction and contribution (in an audio sense) during videotape recording sessions. In those areas where intercom type amplifier-speakers are utilized near the learning space station, it is a simple matter to specify that the amplifier-speaker should be capable of acting as a "talk-back" speaker, controlled from the station to the supervisory control station wherein the latter relays the "group talk-back" to a dummy intercom position identified with "lesson audio jack" otherwise providing a program source to the same learning space (see requirement no. 6, program source (b)) In those areas where intercom type amplifier-speakers are not used due to sound reinforcement arrangement of speakers, separate microphone pickup will be necessary. In either event an auxiliary connection to audio circuits of the videotape recorder will be necessary.

APPENDIX B

FORT LINCOLN NEW TOWN

ENVIRONMENTAL EDUCATION PLAN

FT. LINCOLN
NEW TOWN
ENVIRONMENTAL EDUCATION PLAN

Recommendations

Prepared and Submitted
by the

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This study was prepared for the Educational Services Division of General Learning Corporation by the Environmental Science Center under the direction of B.B. Clark, C.E. Vogt and M.J. Naylon. Work presented or reported herein was performed pursuant to a Grant from the U.S. Office of Education, Department of Health, Education and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U.S. Office of Education, and no official endorsement by the U.S. Office of Education should be inferred.

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I. ECOLOGY AND THE INSTRUCTIONAL PROGRAM

Introduction. The plans for the development of Fort Lincoln New Town repeatedly demonstrate a concern for man's relation to his environment. Appearing throughout the information provided are references to (1) land development consistent with the ecological conditions of the site; (2) creation of a unified physical environment; and (3) preservation, within limits, of the existing natural attributes of the area. Of equal significance (if not greater importance) is the consideration given to the creation of learning environments - schools or other areas wherein "education" proceeds. Finally, the educational modes to be developed - the curriculum and strategies - seems to reflect a strong environmental orientation. The notion of the ecosystem - an aggregation of life entities, physical environs and an integrated system of energy phenomena - is a pervasive one. Further, the most significant ecological idea appearing within the materials examined was that of the continuum.

An educational continuum. A continuum (viewpoint) would cause an educational planner to provide for an uninterrupted series of experiences each interrelated with the other. It would abolish the notion of the disciplines and the customarily fragmented mode of subject presentation It would call for a provision for correlated experiences not all of which are preplanned. And thus would admit of serendipity in the learning process.

From another standpoint, the learning environment would not be a single physical structure. It would be the child's entire environment limited only by the lack of ability to physically get from one point to another within it. We are thinking here about concern for expanding the concept of school to include the immediate community, neighborhood, city, etc. No longer, then, is there such a physical entity as a school that exists by and for itself. Concomitantly, there will no longer be lodged in the mind all of the negative thoughts the word school evokes.

Interdependence and education. The benefits of an ecological point of view in terms of planning for the future of man's community are patent. Communications, technology, travel, and knowledge have progressed to the point that the world can be considered an ecosystem in which man is the dominant species of animal. To view the world as an ecosystem is to realize the interrelationships which have been woven among men; interdependence among men now exists on a world rather than community basis. To think only of one's immediate environment is to perceive and live a parochial existence no longer consistent with reality. Indeed, it is a dangerous position to hold.

According to Ian McHarg, it is to education that the greatest benefits of an ecological point of view will accrue. "Here separatism rules, yet integration is the quest. This ecology offers (to education): the science of the relations of organisms and the environment, integrative of the sciences, humanities and the arts - a context for studies of man and the environment." If one accepts the proposition that the ultimate goal of education is to potentiate the likelihood that a person will achieve fitness in his society - environment, then the ecological view of education would seem to offer valuable insights to an educator whose concerns are similar to the ecologists.

A criticism which can certainly be leveled at the educational enterprise is that at best, it has been a patchwork quilt of unrelated efforts. Sadly, most educational reforms are introduced in a piecemeal way such that reform in one area of the system does not naturally lead to reform in other areas. Curriculum innovation has by and large not caused change in instructional strategies. A "micro-cultural lag" thus results; restructured curriculum taught via traditional didactic methodology. Yet, ecologically speaking, a change in one component of a system should lead to subsequent changes among other components. Since this is often not the case with educational innovations, perhaps the reason is that educators (at least many of them) simply believe that a single innovation at a time is sufficient. An additional barrier is often the evaluation requirement imposed: hard data must be developed before additional facilitating changes occur, forcing one change to be proven effective before others are made regardless of the fact that success of one is dependent on a multiplicity rather than a single set of factors. Change in the total system as well as in one area (curriculum) must always be considered, then, from an interdependence of factors point of view.

Educators must be made aware of the fact that an educational program should be composed of interrelated components. Fragmentation of knowledge into the disciplines leads to the typical elementary teacher's complaint of having to be responsible for eight separate areas in the curriculum. This is a waste of time - the children's - and energy - the teacher's. Children come to see school as eight to ten different disparate experiences, none of which bear any relationship to the other. Often one hears the child in science "class" say, "this isn't science, it's arithmetic." The child might be engaged in graphing data; but he does not view mathematics as a supportive and necessary tool of science. Where did he learn to perceive the separateness?

Ecology seeks to discover interrelationships, to view the world as a whole not as an assemblage. Its view of man is one that sees him as a member of a population. Within that environment man has experiences whose consequences shape his learning, his socialization, growth, and ultimately, his fitness as a member of the community. This would suggest that the broader and richer the experiences of the child the more probable will be a sense of fitness in the future. Adaptability is the key to the notion of fitness. As the child experiences his environment he modifies his behavior to achieve varying degrees of congruence with its elements.

These experiences should include increasingly significant encounters with the environment outside of the school facility. The community is the real world - it is a resource to be explored, examined, measured, explained, and modified. It is not, polemically, the other environment apart from the school, but yet another environment of many interrelated environments all of which exist along a continuum which has no direction, beginning or end. Children should be able to move from one point on the continuum to any other without the "shock" that is so typical of the singular field trip experience. Thus when a situation demands the utilization of an environment having characteristics other than those found in the school, the children should seek to find that environment rather than read about it or attempt to verbally simulate it. The only criterion here is of course the feasibility of an excursion - can a particular environment be found feasibly? Preliminary examination and inventory of a school site and environs prior to the expected or planned-for experience can help the teacher focus the direction of the experience in a way that it can be accomplished.

Functional schools. Realistically, the child will spend the balance of his learning years in a facility designated as a school. This facility can be an exciting, intriguing, and motivating structure if it is planned as sets of contiguous environments whose inhabitants will vary in physical, developmental, emotional, and intellectual characteristics. There must be a habitat, a niche within the structure into which each child can fit. The niche is a physical as well as an emotional and psychological micro-environment. It can be rich and varied and riotous or serene and cool and neutral. Both must exist to accommodate the variation within the inhabiting species. Above all, it must accommodate children first and adults secondly, *An ecological framework*. While an educational program should probably not be responsive (in an unexamined though well intentioned fashion) to each societal problem or upheavel, there is a sense of urgency about exposing youngsters at a very early age to environmental studies. Essentially this involves coming to grips with the idea that the components of the environment are interrelated and to disturb one is to affect unknown numbers of other components. There appears to be a great deal of evidence which suggests that certain features of our environment have been disturbed beyond the point where resources can be marshalled to save them. Much of this degradation proceeded in the past out of ignorance; that is forgivable. However, present day knowledge clearly shows that several natural resources (air, water) vital to the existence of man on this planet are being rendered unfit for man's consumption. And man has only himself to blame. There is reasonable doubt that he has ever viewed the world as his habitat. Nor has he thought about the possibility that there may come a time when his ability to adapt to an increasingly unfavorable environment is lost.

At the present time man is in a position to evaluate his condition and make decisions. Perhaps that statement should be amended to read some men are able to evaluate. Too few of us have sufficient knowledge to deal with questions which are of an ecological nature. This lack of knowledge in part accounts for our ridiculously slow pace in dealing with the problem. An uncountable number of our population simply are not persuaded that a danger exists, the evidence not withstanding. And perhaps that is the heart of the problem; much of the population is unable to recognize and evaluate evidence of any nature. They simply have not had sufficient evaluative experiences as part of their education. Decisions are made on the basis of other factors not the least of which is one's own personal needs and persuasions.

Many of the previous ideas can be found interwoven throughout the materials examined. They suggest, to repeat, an environmental orientation, which, in turn, has strong implications for the Fort Lincoln New Town Educational Program. The following pages are devoted to a discussion of those implications. Included are: (1) plans for modification of the first educational facility proposed, (2) plans for incorporation and utilization of surrounding facilities as an integral part of the total educational program, (3) some thoughts on staff preparation for use of the environment as a focal point for an educational program, and (4) recommendations for the educational program.

II. ENVIRONMENTAL EDUCATION POTENTIAL IN THE FLNT PROJECT

FLNT 1st Facility. The following recommendations for the FLNT 1st Facility are designed to provide for a numberof experiences which will promote a sense of identity as a community and as a national entity. It is hoped that implementation of the recommendations contained herein will promote an awareness of environmental surroundings, the universe and also provide multiple opportunities for self-expression and interpretation of that with which children are confronted in their planned learning experiences.

a. Paved entrance. The main entrance to the FLNT 1st facility is to be paved and is projected as a recreation area. In that this is to be a main traffic area through which all of the people who will be attending this school will enter, it is suggested that plans will be made to reinforce identification with their community and with the nation. This could be done by the provision for a map of the United States in which Washington D.C. area would be circled or highlighted in some other manner. The second graphic superimposed on the surfaced walk or indented in the cement itself would be a representation of the projected FLNT redevelopment.

b. Pre-school area. Children of this age are well aware of the existance of the family as a socio-ecological unit. At least through their own experience, they recognize the fact that there are such things as mothers, fathers, brothers and sisters. It might be well to use this area to reinforce the concept of family as a sound unit of soceity. This could be done in a number of ways. Along the walls of the building there might be murals depicting animal families and human families representing various races and cultures. The lower portion of the outside walls and fencing might well be made of some material such as oil cloth that would be appropriate for art activities conducted outdoors. In addition to the games and story telling that would take place on this site, the children might be encouraged to engage in art work upon these walls representing or interpreting family unit events. One might also draw parallels to animal families and broaden their horizons by relating and comparing their families to those of other creeds or nations.

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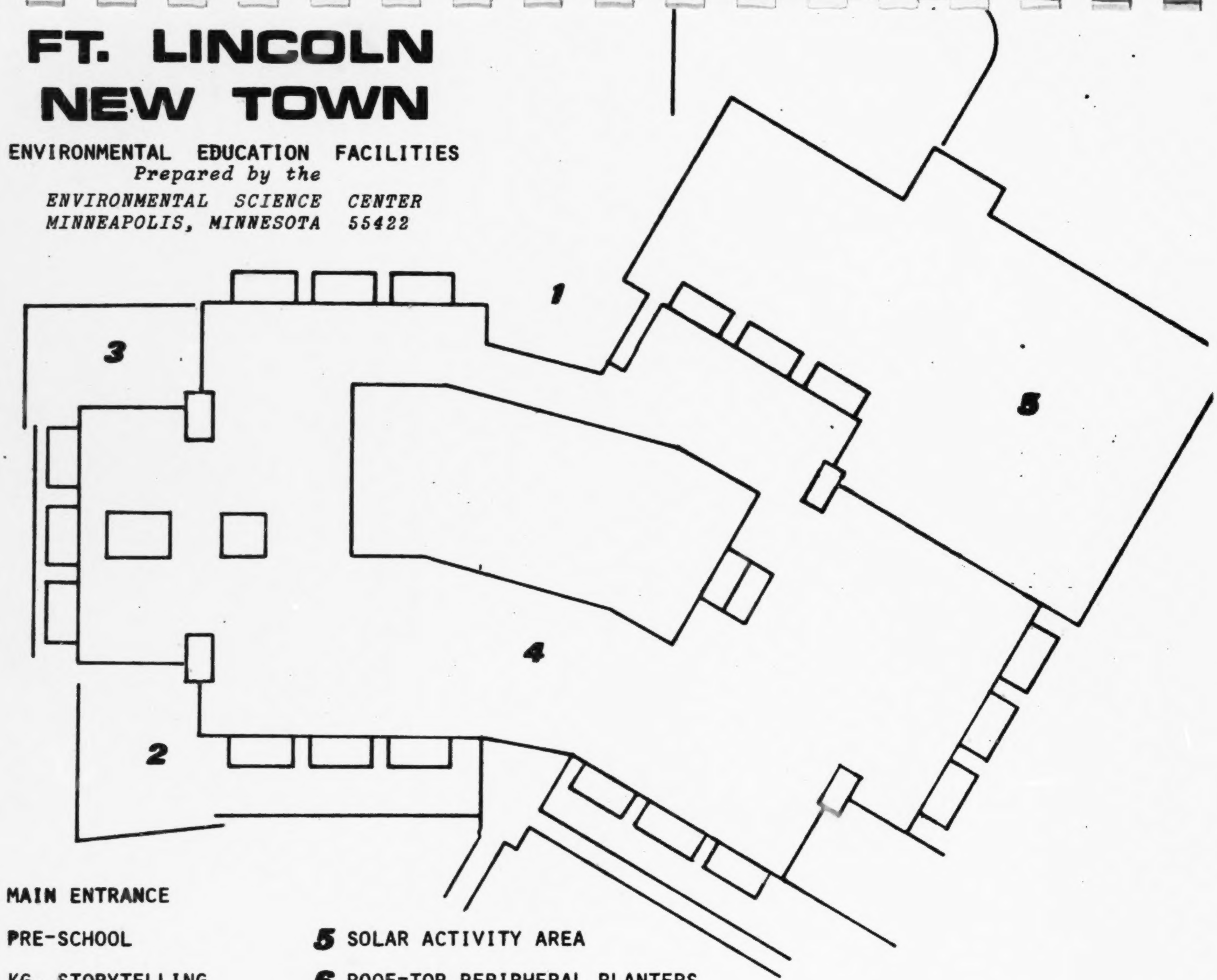


1 MAIN ENTRANCE
2 PRE-SCHOOL
3 KG. STORYTELLING
4 DECENTRALIZED LUNCH
5 SOLAR ACTIVITY AREA
6 ROOF-TOP PERIPHERAL PLANTERS
7 IMMEDIATE SCHOOL GROUNDS

c. KG story-telling area. General emphasis in this grade level is also on the school and family. It is therefore recommended that this outdoor story-telling area be developed so as to provide an opportunity for self-expression and interpretation. One aspect of the family probably considered at this early age is the "home and shelter" concept. It is therefore recommended that there be a slight grade from the outside wall to the school to create an amphitheater effect.

Provision could be made in the corner area of this enclosure for the inclusion of two structures which could represent home and shelter. One might be rather symetrical and conforming abstractly to the types of buildings that we make, that is to say, relatively square or retangular. The other could perhaps be low and cylindrical. Provision for a multiplicity of holes and openings such as triangles and various other geometric shapes would provide an opportunity for the children to crawl in and out with ease during play.

Inevitably the stories talk about animal homes or various human habitation: The children could be encouraged to act out interpretations by using these various facilities in terms of animal homes and stage props for representations from the story. Further opportunity for an art form expression of the stories that are read could be made by providing for simple writing surfaces upon the lower portions of the side-board or wall. This could be oil cloth or something else that you could write upon yet could be easily removed. In this fashion one provides for not only the listening skills but also interpretative acting and interpretative expression through art itself. The upper portions might contain permanent representations of animal and human homes.

d. De-centralized lunch area. The area outside the lunch space which is viewed through a fixed-glass facility could be aesthetically developec to bring out or reinforce the idea of universe, size relations and distance. This could be done by graphically representing the planets in the solar system in terms of their relative size on the roof top itself. These could probably be painted on annually as a project or put on more or less as a permanent fashion. It is suggested that they be arranged in their linear relationship to the sun.

The wall facing this glassed in area might also be used to point out additional aspects of our solar system by representing the distances between the plants in some reduced scale. These planets might be represented by an appropriate square containing the name, a colored picture and also their astrological symbols. This could be used in the 4-6 science discussions to illustrate our cultural background and also the evolution of science as it moved from an intuitive, parascientific endeavor to the true sciences.

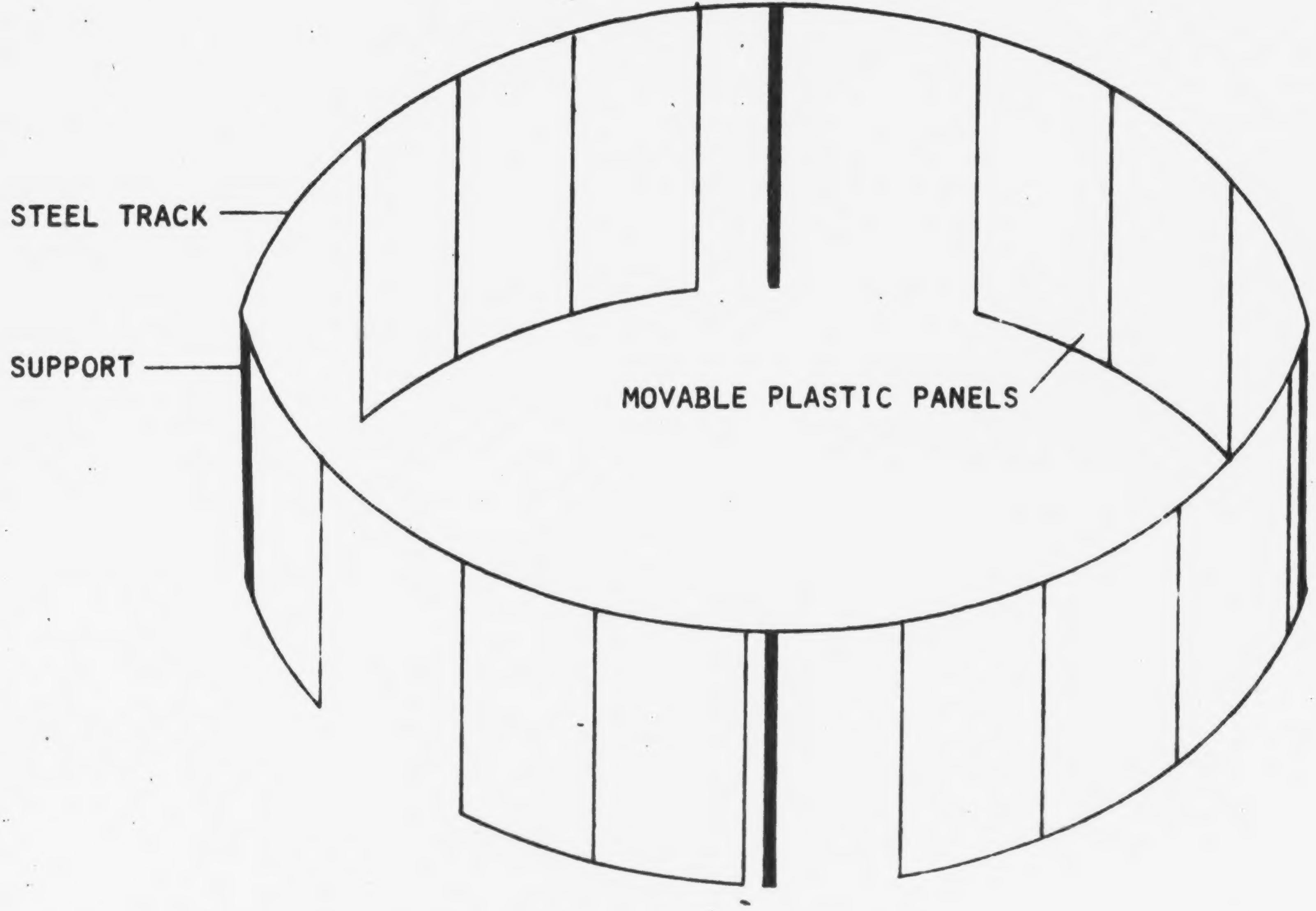
e. Solar activity area. Included are drawings for a solar activity area designed to provide for significant combined experiences wedding (1) science (2) sociology and (3) the interpretive and performing arts. This facility is historical in the sense that its very conception is borrowed from Stonehenge in England. The advantage of using a translucent or transparent colored material is that sunlight would pass through the wall barriers. Provision for having panels on a track system would allow for a multiplicity of experiment configurations which could be set up by the students for multiple uses. Studies could be done upon absorption, temperature transmittance and the effect of color patterns on the varigated color grid superimposed on the roof at this point.

You might also consider the possibility of having a number of these panels contain aesthetically designed holes in them. These would be curvilinear in pattern and would allow for the sunlight to pass through relatively unaffected. Mapping activities of the solar movement and calculation of the angle above the horizon would be permitted by this addition. These panels should not be more than two times the average size of the child in the phase IV program to better allow him to identify with the system as something scaled more to his perceptive world of relative size.

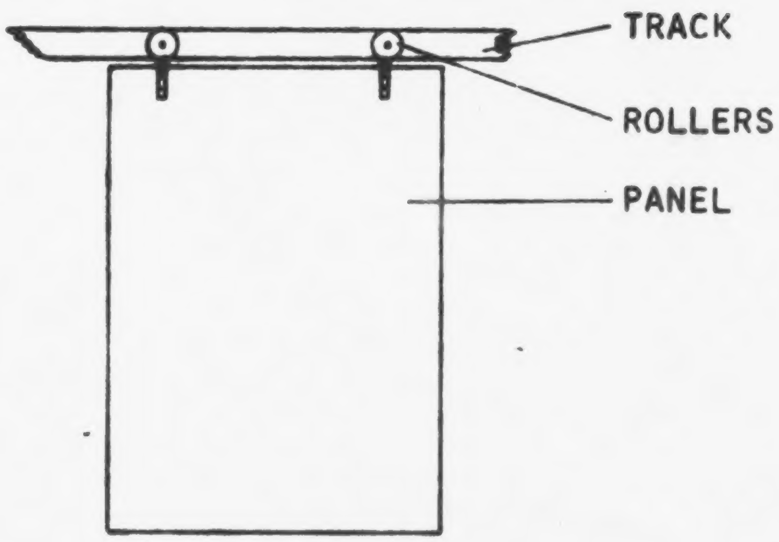
In addition to providing opportunities for science studies, the facility would also lend itself well to the performing arts in that new configurations could be made which would allow for a performer area and an aesthetically pleasing setting leaving ample room for observers. Several of these configuration alternatives have been included in the enclosed schematic. The performing arts could possibly be combined with historical or sociological aspects of the child's education at this point. While he is studying communities and peoples, his horizons might be broadened to include those of other nations. Perhaps the children themselves could act out aspects of the ancient sun culture or relate to the practices of the Druids. In this way they would not only be learning in a formalized sense about other peoples and their relations, but they would also in effect be practicing an interpretation of them.

We have taken the liberty of substituting an alternate facility for the ancient heelstone. This particular structure would be roughly a curvilinear isosceles triangle. It would be made of a clear material which would have a wrap-around design. The top portion of it would contain a window with some aesthetically designed sighting device through which the sun could pass unhindered. The center of this structure would be consistent with a 45° azimuth to the sun's zenith. This would provide for tracking activities of the sun and will demonstrate quite graphically the seasonal changes and the position of our earth's energy source.

SOLAR ACTIVITY AREA


STEEL TRACK
SUPPORT
MOVABLE PLASTIC PANELS

DETAIL DRAWING


TRACK
ROLLERS
PANEL

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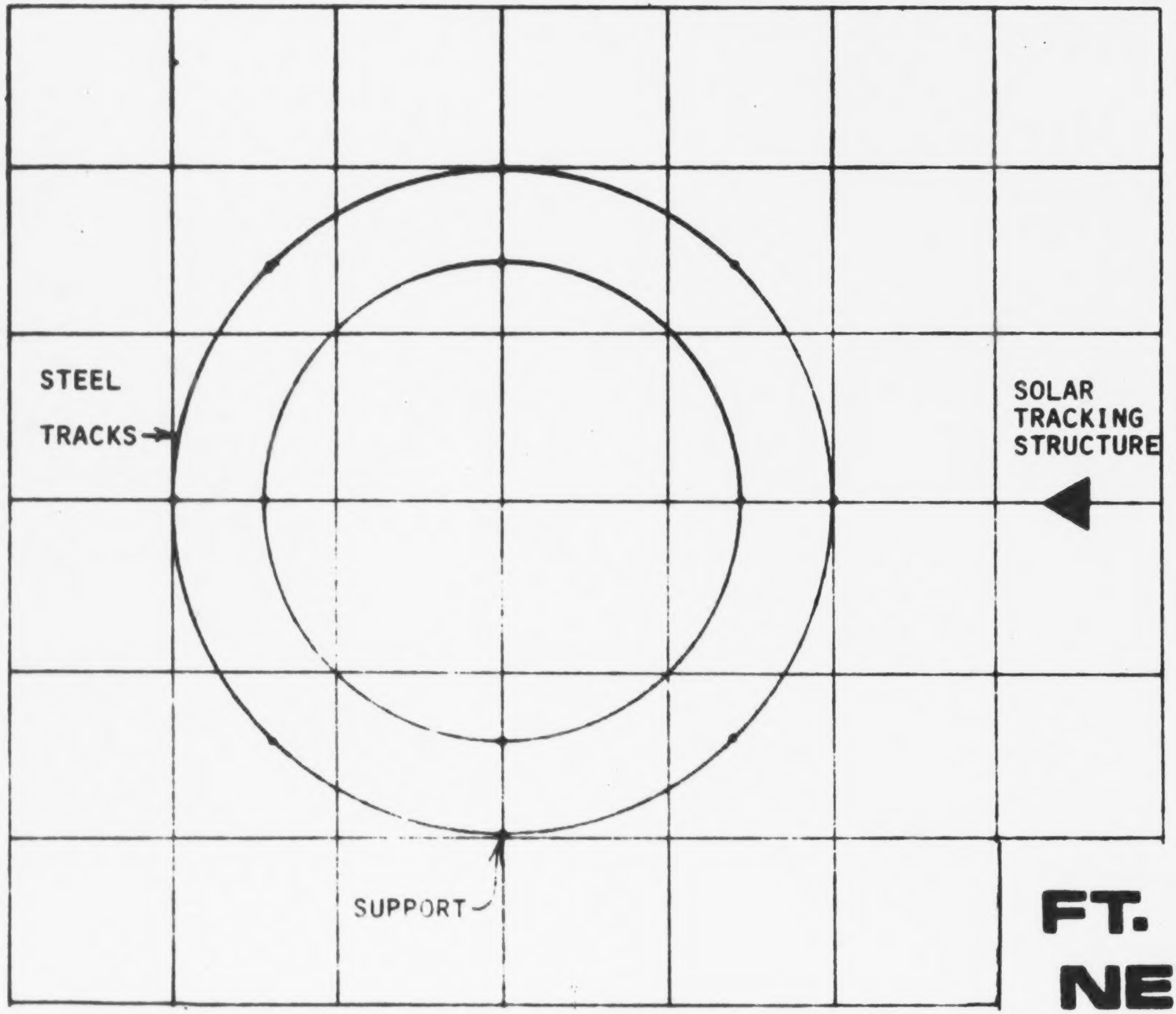
SOLAR ACTIVITY AREA

OVERHEAD VIEW


STEEL
TRACKS
SOLAR
TRACKING
STRUCTURE
SUPPORT

COLORED BITUMINOUS GRIDS

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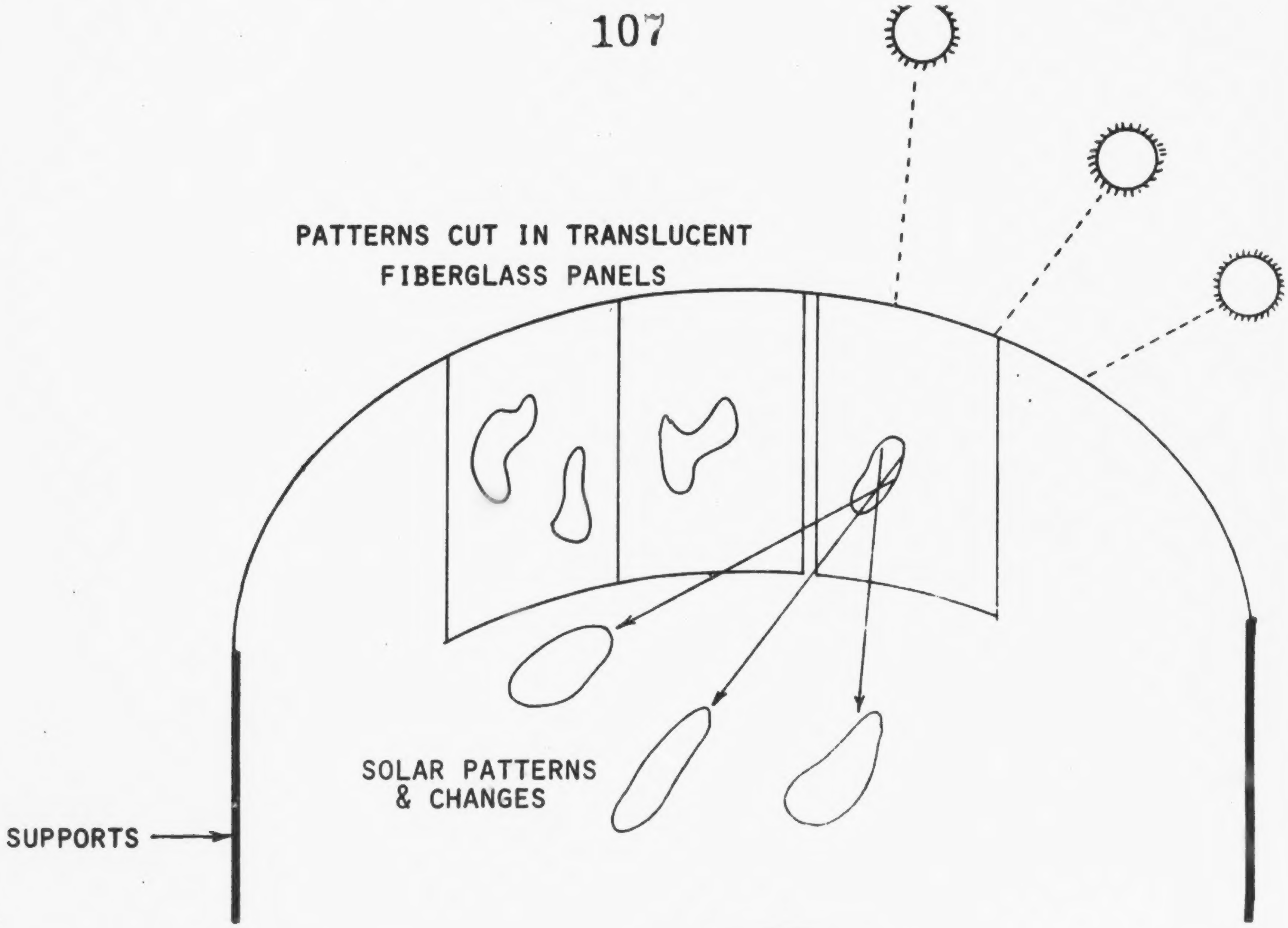
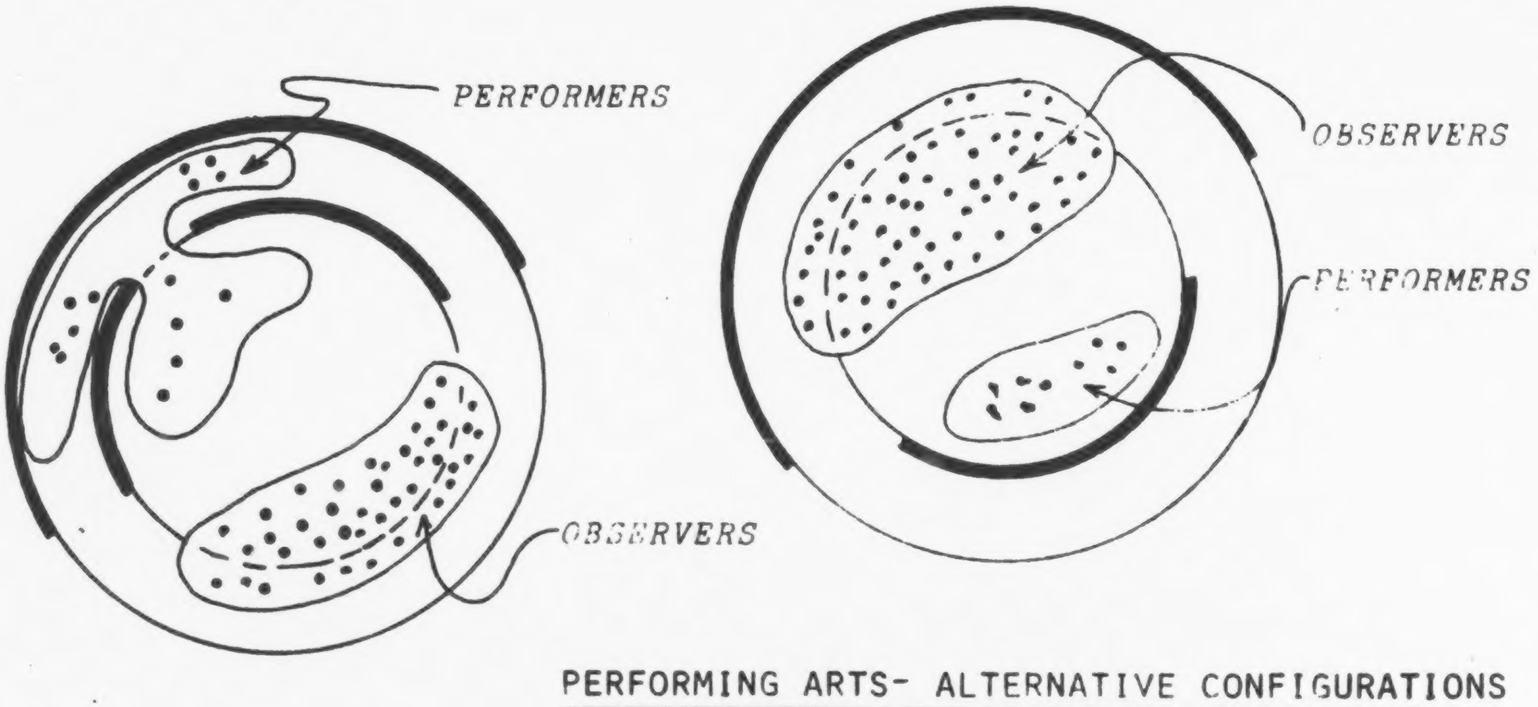

PATTERNS CUT IN TRANSLUCENT FIBERGLASS PANELS
SOLAR PATTERNS & CHANGES
SUPPORTS


PERFORMERS
OBSERVERS
OBSERVERS
PERFORMERS

PERFORMING ARTS- ALTERNATIVE CONFIGURATIONS

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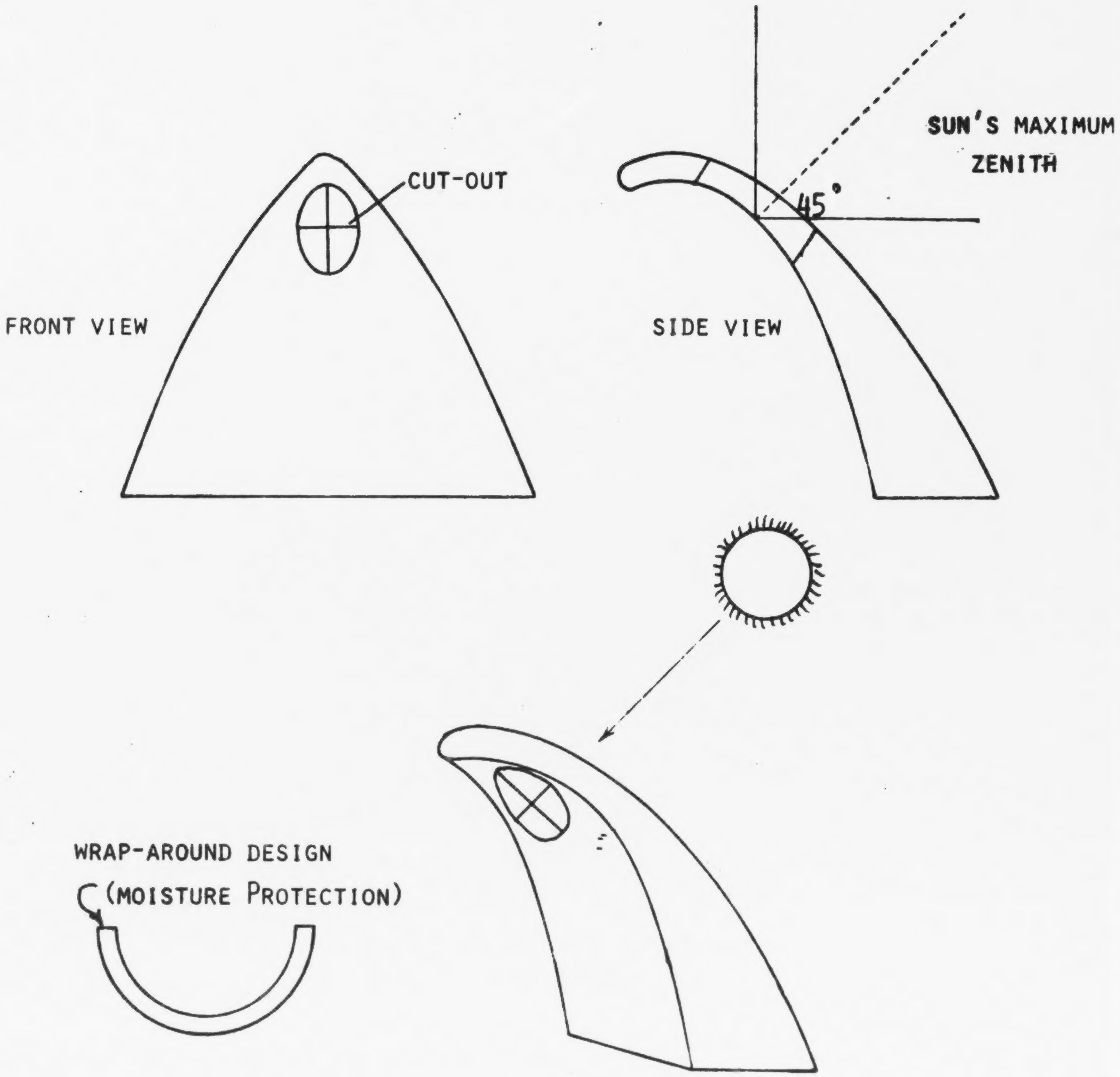

CUT-OUT
FRONT VIEW
SIDE VIEW
SUN'S MAXIMUM ZENITH
45°
WRAP-AROUND DESIGN
(MOISTURE PROTECTION)

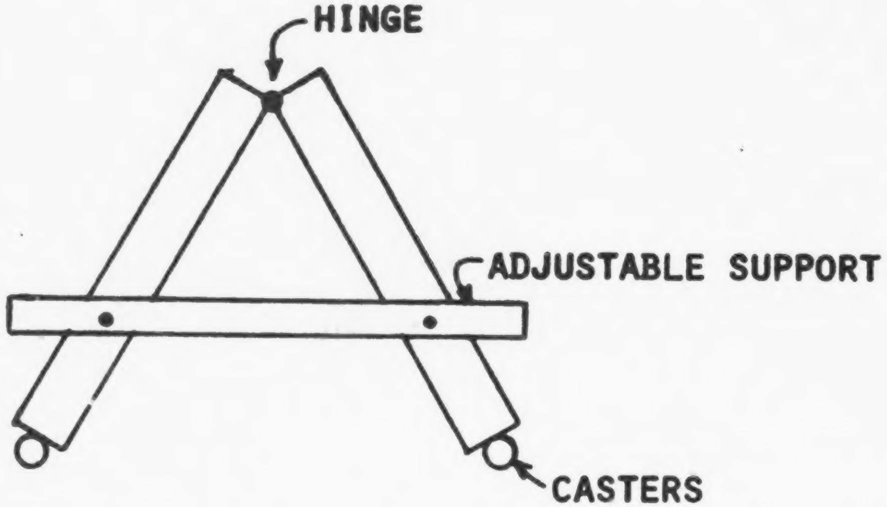
INTERPRETIVE ART AND SOLAR TRACKING STRUCTURE

The above structure should be constructed from a clear transparent material (glass or plastic). Each of the educational phases (I through IV) could be charged with the responsibility of painting a tempera mosaic on the protected underside during some arbitrary time block. This mosaic could be a representation of socio-ecological events which are particularly meaningful at the time.

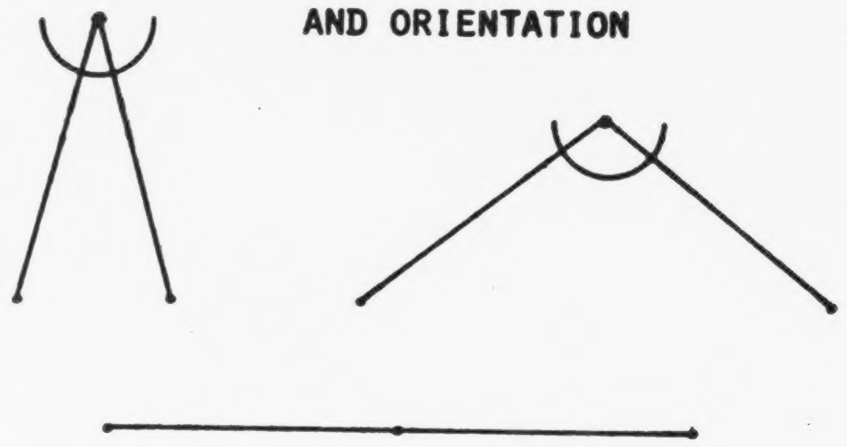
f. Micro-climate planter. This particular facility is designed as the mobile science resource in that one can get at some of the aspects of micro-climate and solar orientation in relation to plant growth. It is positioned on wheels and has a changeable angle to permit for slope severity studies and north-south orientation microclimates. It has been compartmentalized so that there is multiple opportunity for planting a number of different plant species. Compartmentalization would also cut down on soil erosion and tend to hold the soil substrate in position when subjected to the elements on the rooftop. It is recommended that this particular structure not be used in any singular area. Groups may see fit to move this planter from the lower phase nature study area to the upper grade science area in relation to or consistent with the particular unit of study at the time. They may even find it desirable to position it in the solar activity area to study the relative effects of the play of a variety of lights on plants while they are growing.

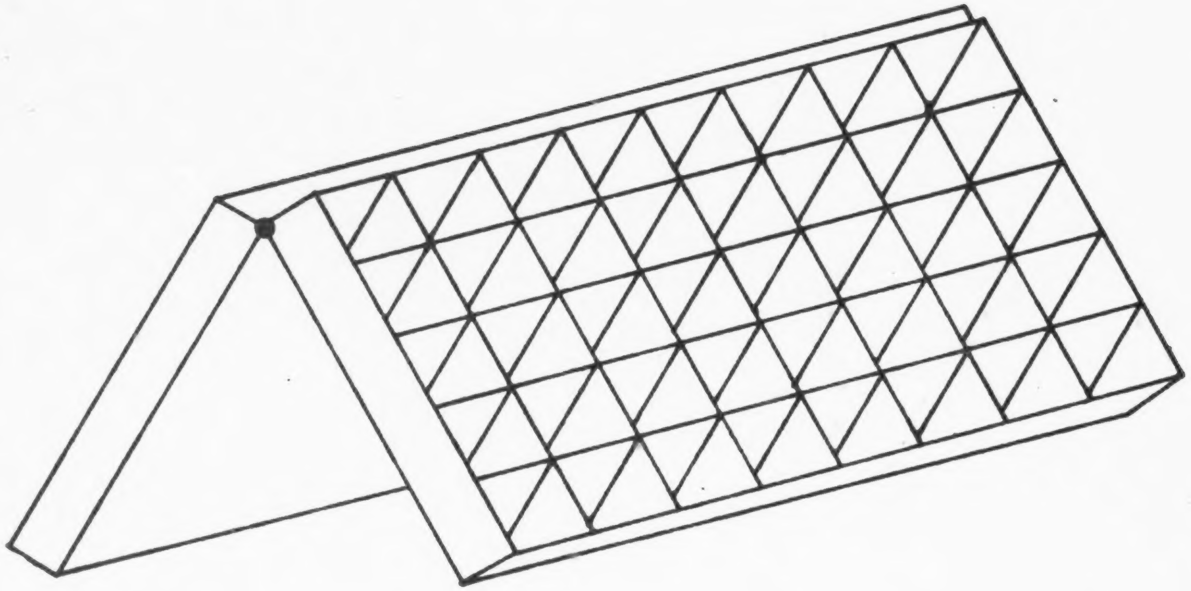
g. Peripheral planters. As long as provision has been made for the periphery of the rooftop to be commited to planter areas, it is recommended that arbitrary lengths of these planters be colored-coded for ease in their designation as special purpose activities. These planters could be used by all groups. Individuals who are involved in art activities might wish to grow a particular species which would provide them with raw materials for seed mosaics, other plant material for texture studies or to provide aesthetically pleasing vegetation for sketching and drawing purposes. Science studies can be conducted by changing the planting substrate, i.e. using a variety of soils or controlling moisture conditions for homogeneous or hetrogeneous plantings. There would also be the possibility of planting Jerusalem Artichoke or the compass plant sunflower which demonstrates a sun-following orientation with the flower face. Concomitant studies conducted with activities going on in the solar activity area would tend to be of a reinforcement type and emphasize the central functional value of the sun itself as a primary force in our universe establishing a set of conditions which permits life to exist. Relative to socio-ecological studies it might be well to have them grow vegetables also, and allow them to prepare these herbs according to recipes that were used by our native ancestors. Also areas below planters could be oil cloth surfaced and used as record keeping places.

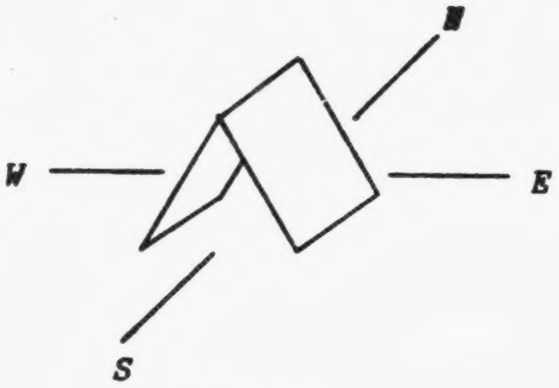
ADJUSTABLE PLANTER


HINGE
ADJUSTABLE SUPPORT
CASTERS

VARIABLE INCLINATION
AND ORIENTATION







RECOMMENDED SIZE 3′ X 6′ TO OUTSIDE EDGES

COMPARTMENTS CONSTRUCTED TO ACCOMMODATE
VARIOUS SIZE CONTAINERS.

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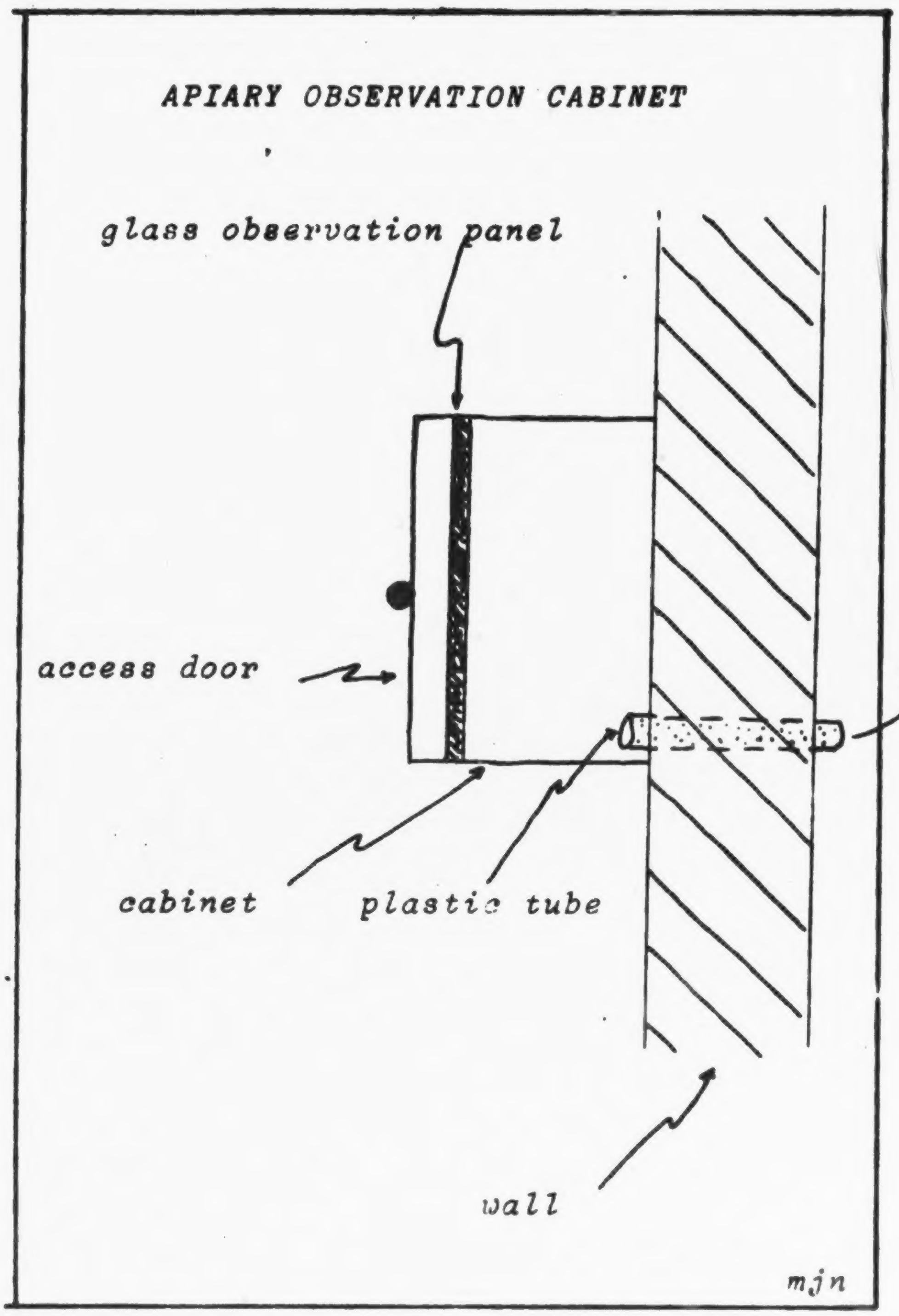
ENVIRONMENTAL SCIENCE CENTER CEV


APIARY OBSERVATION CABINET
glass observation panel
access door
cabinet
plastic tube
wall
mjn

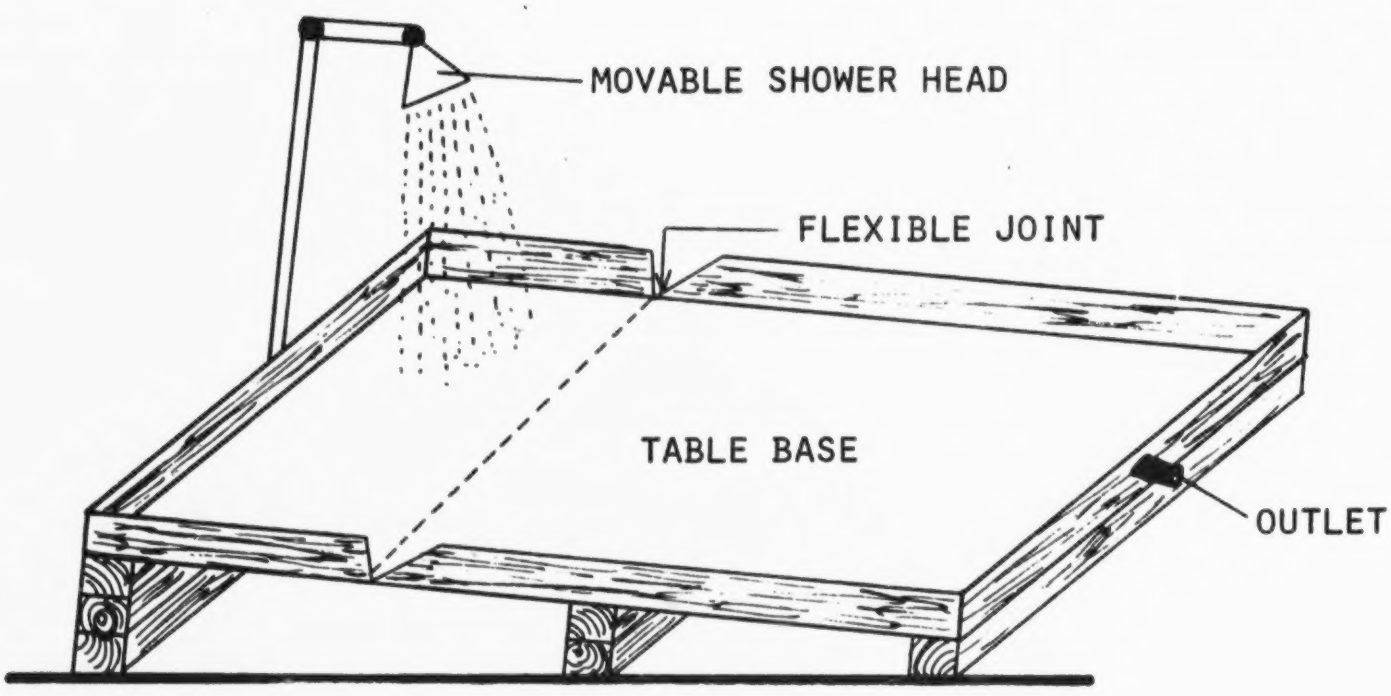
Honeybee ecology. You may wish to start a number of apiaries. The bees will not only provide children or adult groups with honey, but many interesting activities can be done on navigation and range. Merely mark hive samples with paint or nail polish. Investigators can then collect from the nearby fields, take data and release the speciments unharmed. Range and territory patterns will emerge. Observation through the windowed hive may permit the young scientists to see navigational "dance" instructions safely.

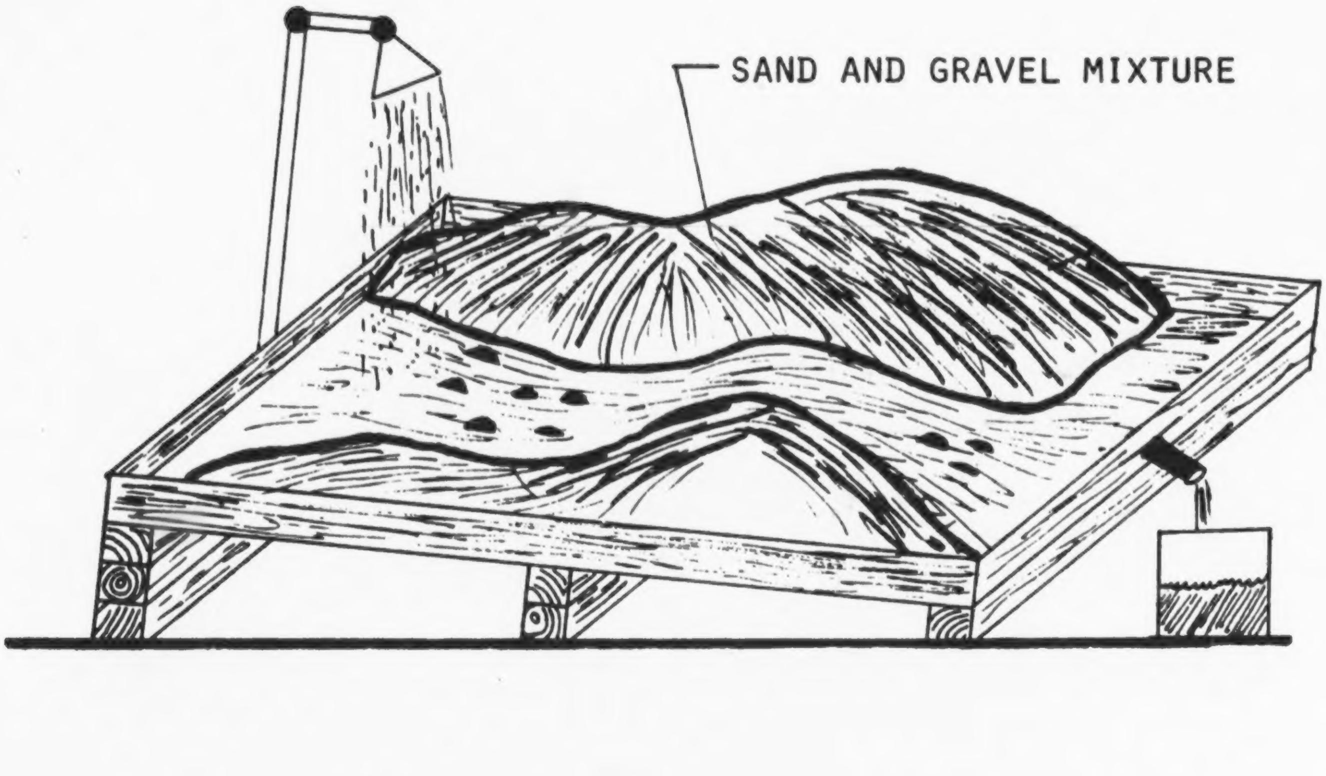
h. Life-sized stream table. A large box containing sand and gravel having a water source has been designed to be placed on the roof. Children can see immediate effects of rain and wind on the sand pile. The water source will provide them with a stream in miniature. Dams and other artificial barriers can be employed to discover something about how moving water effects the landscape. They can try duplicating a miniature Anacostia River Valley with the stream table. This opens up all sorts of possibilities for inferring something of the past and future of the area. This activity could be integrative of all contributing content areas of the curriculum.

i. Additional roof activities. The following suggestions would not require building modifications or additions: (1) measure roof areas and compass angles to construct a map which can then be compared to an architect's drawing; (2) utilize the air conditioning unit for heating, cooling and condensation studies; (3) use telescopes for distance viewing and use in measuring long distances via triangulation methods; (4) children can construct devices to estimate particulate air pollution, pollen dispersion of air borne algae and fungus spores by setting petroleum jelly-covered slides about and then checking them after some arbitrary time lapse - they can be placed in water or on nutrient agar to see if the contents grow; (5) wind and turbulence patterns can be mapped about corners and edges of the roof using graph paper and simple wind direction indicators; (6) compasses can be used to determine wind directions or for "orienteering" games on the roof and grounds.

j. Immediate grounds. There are several functional modifications that could be made on the grounds that would not be at the expense of already projected utilization, One of these might be the provision for geometrically-designed planting areas around the periphery of the building. Groups from each of the Phases might well be charged with the planting and maintenance of the planters. It is recommended that the flowers be annuals to provide for an open-ended situation of continual experience in planting and maintaining an area which aids in the beautification of the school.

A second alternative allowing for activity involvement would be the provision for outdoor cooking facilities of the types used by pioneers and early representatives of American or overseas cultures. These could be clay ovens, cooking pits, etc. It is recommended however, that a flame not be used in these, but rather they contain subtle modifications to allow for the use of charcoal in the cooking structure. Students might well try their hand at baking or cooking, thusly re-experiencing some of the things that our ancestors did.


MOVABLE SHOWER HEAD
FLEXIBLE JOINT
TABLE BASE
OUTLET


SAND AND GRAVEL MIXTURE

STREAM TABLE CONSTRUCTION

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NEW TOWN**

ENVIRONMENTAL EDUCATION FACILITIES

*Prepared by the
ENVIRONMENTAL SCIENCE CENTER
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C.E.V

FLNT Environmental Study Areas. General consideration has been given to the educational aspects of habitat and functional environmental education programs. It has been our experience that adult and student groups are able to realize a number of rather far-reaching environmental concepts by exposure to involvement activities which are representative of population, behavioral, abiotic and managerial operative factors. Three small areas of the planned open space have been identified as potential locations for outdoor laboratories. The recommended land use and management practices are general and designed to (1) provide the learner with operative subsystems representative of the functional mechanics of nature in the Washington area and (2) take advantage of the site's contour and orientation.

a. A land management site. There are many misconceptions about the relative value of fire as a tool of environmental management. A simple but direct method of illustrating a practical use for fire and its effects on successional patterns is to establish an experimental plot which provides for: (1) natural succession, (2) interrupted successional patterns and (3) population patterns emerging after burning.

Three adjacent strips of land can be treated in the following manner: (1) burn one strip each year, (2) plow one strip each spring with a roto-tiller that can be rented at any garden store, and (3) allow one strip to remain in its original state. Emerging patterns of plant and insect residents will provide many interesting things for your young scientists to discuss.

b. Food patches. Small field areas can be managed so as to attract seed-eating birds. An attractive aspect of this technique is that seeding is natural. Lay out the grassland area in strips not less than 5 feet wide. Have a minimum of at least 5 strips. Length is determined by the geometry of the area and your willingness to work. Use a roto-tiller to plow the strip. If you have access to a tractor and plow, so much the better.

Plow these strips in alternate rotation each year. By the fifth year, shrub invasion has been halted and strips of mixed seed-producing vegetation are available to birds on a continuing basis. Favorite bird foods such as bristlegrass, barnyardgrass, lambsquarter, ragweed and smartweed will make their appearance in the first year. By the third year, you can expect a mixture of grasses, daisies, asters, goldenrod , milkweed and others.

Implementation of this recommendation will provide you with a 5 year renewable minisystem of succession. If so desired, patches in the other environmental areas could be plowed every 2 and 3 years. This would result in a series of 5 to 15 year successional models within the FLNT complex.

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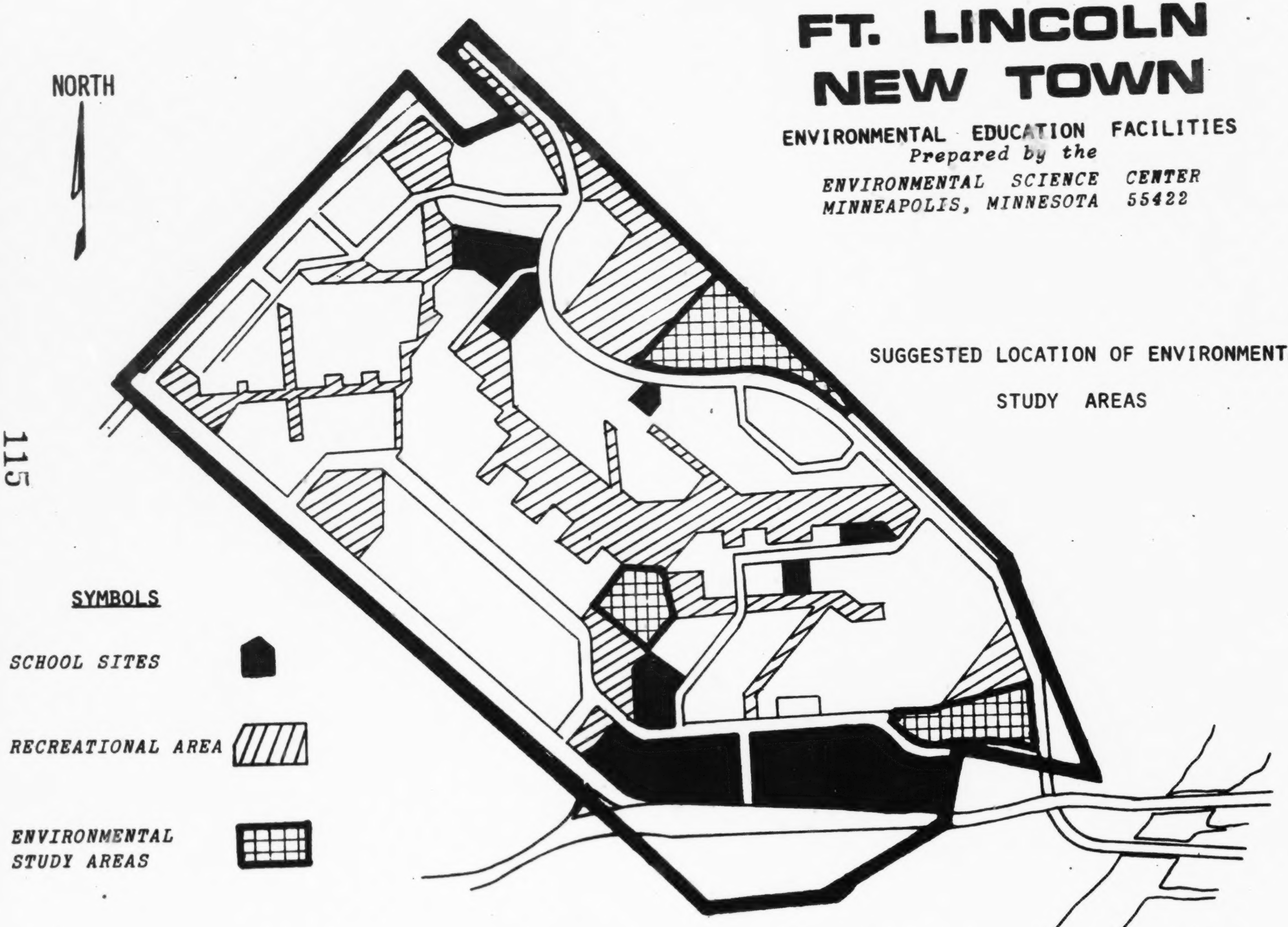
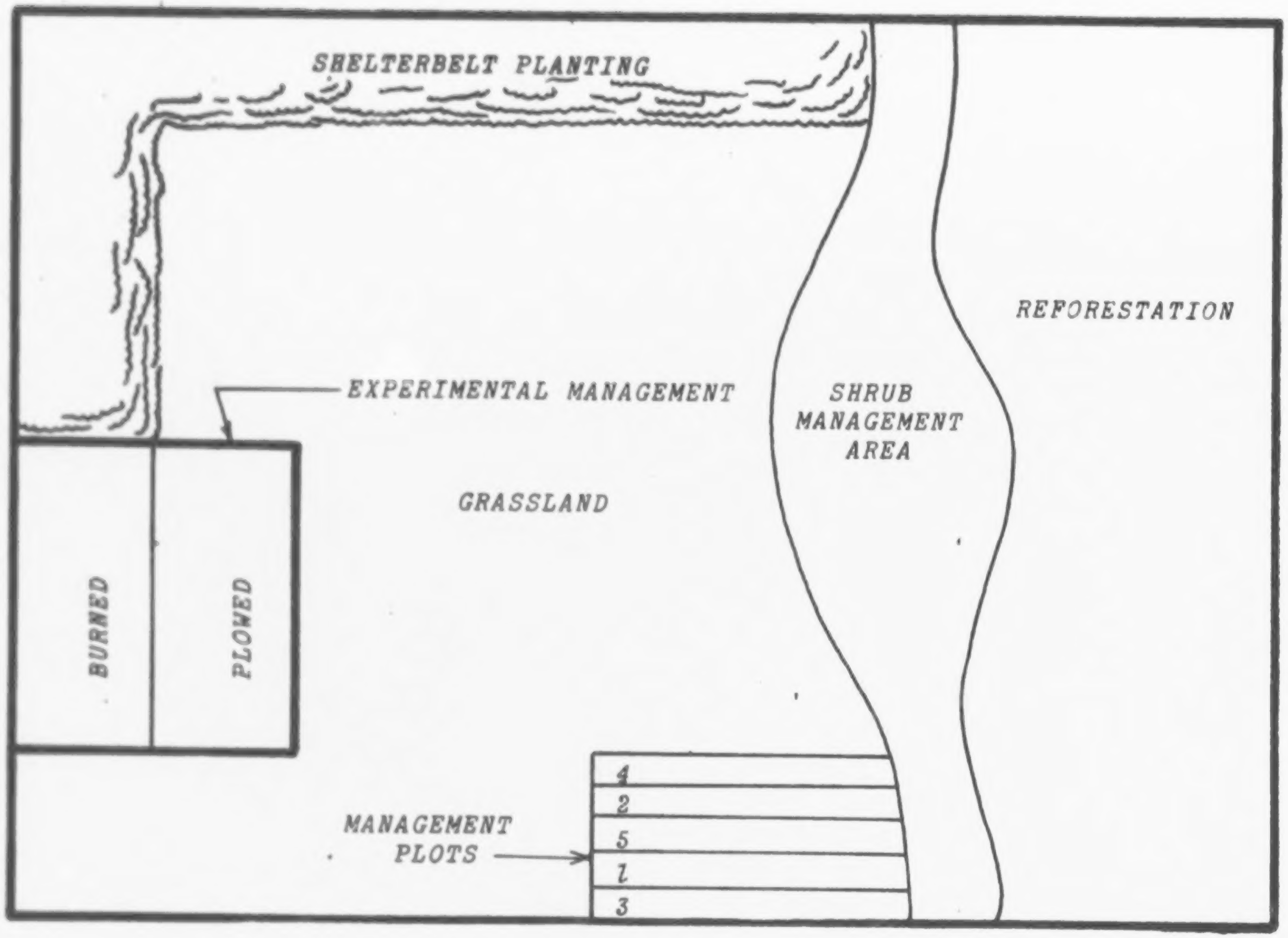
SUGGESTED LOCATION OF ENVIRONMENTAL STUDY AREAS


NORTH
SYMBOLS
SCHOOL SITES ⬟
RECREATIONAL AREA ▨
ENVIRONMENTAL STUDY AREAS ▦
C.E.U.


SHELTERBELT PLANTING
EXPERIMENTAL MANAGEMENT
GRASSLAND
BURNED
PLOWED
SHRUB MANAGEMENT AREA
REFORESTATION
MANAGEMENT PLOTS
4
2
5
1
3

ENVIRONMENTAL STUDY AREA

SCHEMATIC

40%	REFORESTATION, NATIVE SPECIES
5%	SHRUB MANAGEMENT AREA
30%	GRASSLAND
20%	EXPERIMENTAL MANAGEMEN PLOTS
5%	INDEPENDENT STUDY PRESERVE

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C.E.J.

c. Sand transect habitats. Most classes discuss animal homes at one time or another. Unfortunately, an animal unit is often descriptive and the "why" of it all never comes out. One of the factors involved in the distribution of the animals (hence their "homes") is moisture.

The creation of a brush pile provides a potential home and shelter for a wide variety of animals. Situating the woodpile in such a fashion so as to have it run from water to higher, drier ground will create a "mini-world" that is (1) homogeneous in structure, but (2) has a single environmental factor which will vary, i.e. moisture. The same thing can be done with rocks. You might institute a "Bring-a-Log-or-Rock-Day" and get the FLNT students involved in actual development of an educational preserve. This would be a convenient and direct way to get at one aspect of the "why" of animal homes. It's merely a matter of rolling over a log or rock, observing or collecting and replacing the "home".

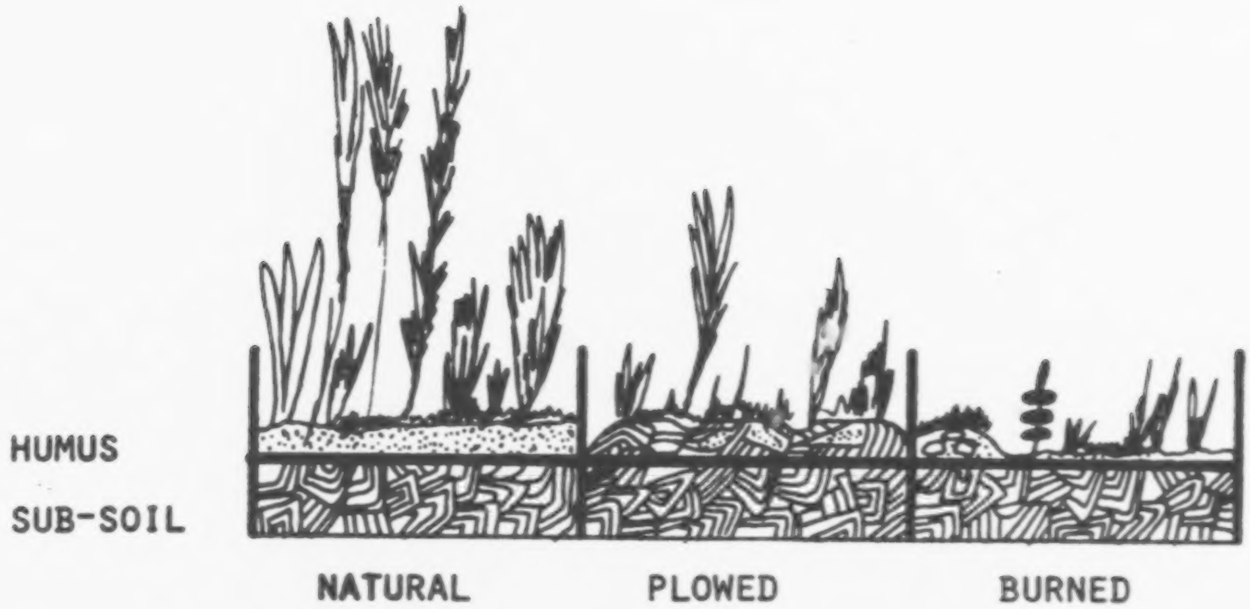
One can also get the animals to write their own stories about their homes by surrounding the habitat with sand, mud or flour. Each night the inhabitants will go about their business and leave a story written in the tracks. In the winter, snow works just as well. When daily records are desired, merely sprinkle new snow and let the animals "write" on it....

d. Prairie studies. Prairie areas are well suited for a variety of plant and animal studies. It will be found that many of the E.S.C. activities and curriculum materials from other sources can be implemented on this type of habitat. These systems are capable of supporting a diverse population of wildlife. Evidence of winter feeding on shrubs and seedlings can be used in population studies. Students might also live trap many of the small rodents which frequent these areas and study their distribution, behavior and food habits. The marking and release of captured specimens by these groups on a continuing basis is encouraged. Cumulative records will provide good population data for the young scientists.

Traps for population studies can be made from coffee cans baited with peanut butter. One can use transect activities to illustrate the importance of environmental conditions in relation to the distribution of living things. Many insects will also be found here and studies could result in determining their favored conditions or plants.

e. Selective brush management. A portion of the environmental study areas has been devoted to brush habitat. This practice has the advantage of (1) increasing the aesthetic quality of your natural area (2) providing food and cover for wildlife and pollinating insects and has (3) the added advantage of being relatively inexpensive when compared to some

EXPERIMENTAL MANAGEMENT PLOTS


HUMUS
SUB-SOIL
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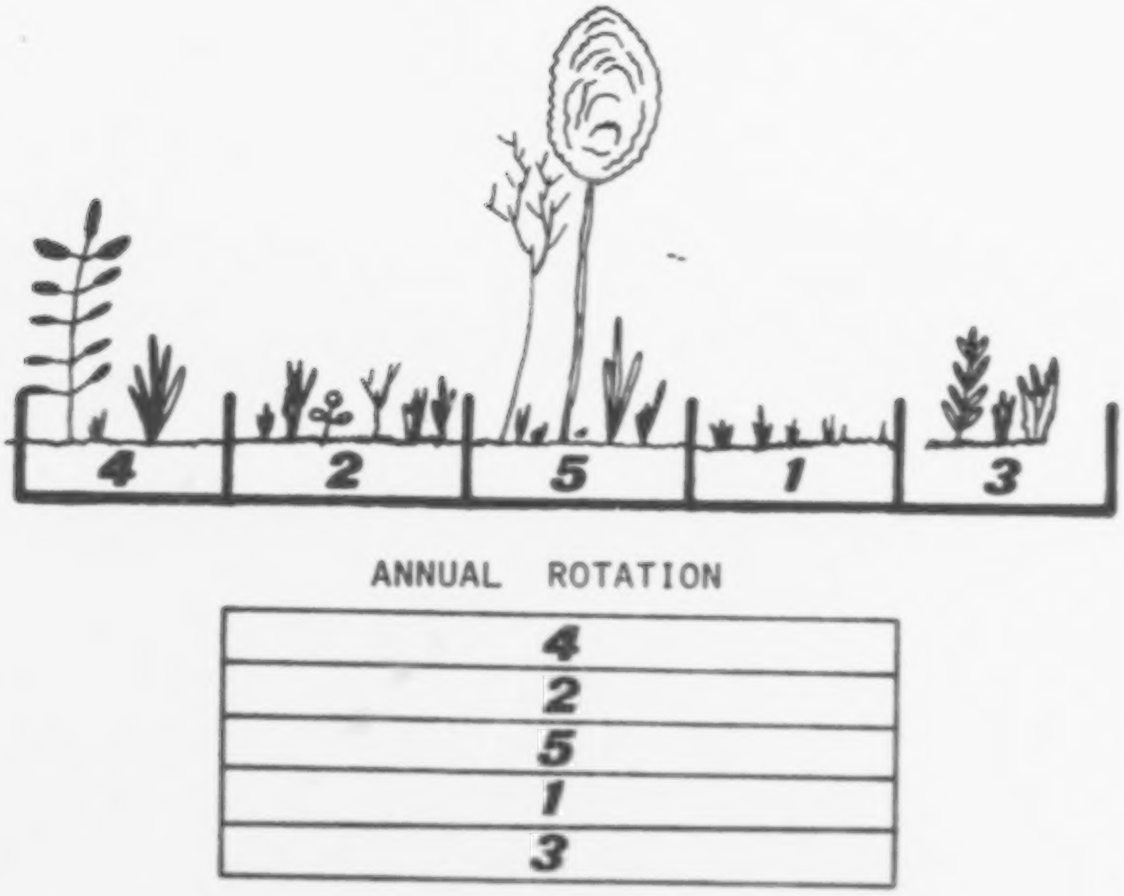
4
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ANNUAL ROTATION
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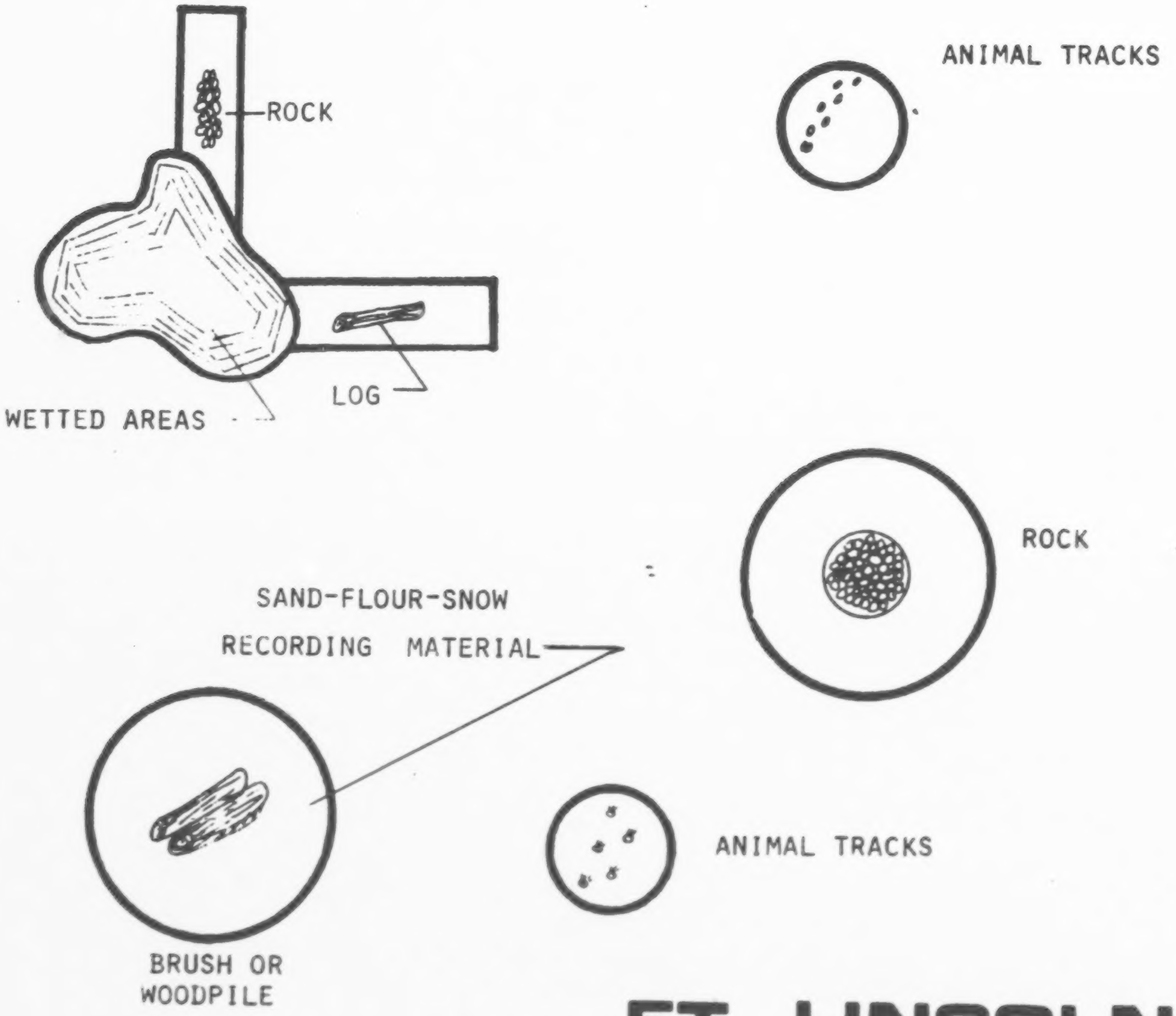
C.E.V.

SELF-RECORDING ANIMAL ACTIVITY TRANSECT AREAS


ANIMAL TRACKS
ROCK
WETTED AREAS
LOG
ROCK
SAND-FLOUR-SNOW
RECORDING MATERIAL
ANIMAL TRACKS
BRUSH OR
WOODPILE

other management techniques. In addition, species such as ragweed and thistle eventually give way to more desirable low-growing shrubs.

Conversion of small areas from grass to shrub cover also changes the complement of animals to be found there. It is known that detrimental insects and mammals occupying grassy areas are more serious crop and garden threats than those residing in shrub cover. The low-growing woody vegetation is the sought-after habitat of many songbirds. Multiflora rose, bush honeysuckle, autumn or Russian olive and highbush cranberry make effective hedgerows along field borders or around gullies and ponds. The catbird, cardinal, mockingbird, cedar waxwing, brown thrasher, indigo bunting and mourning dove are usually attracted to these areas.

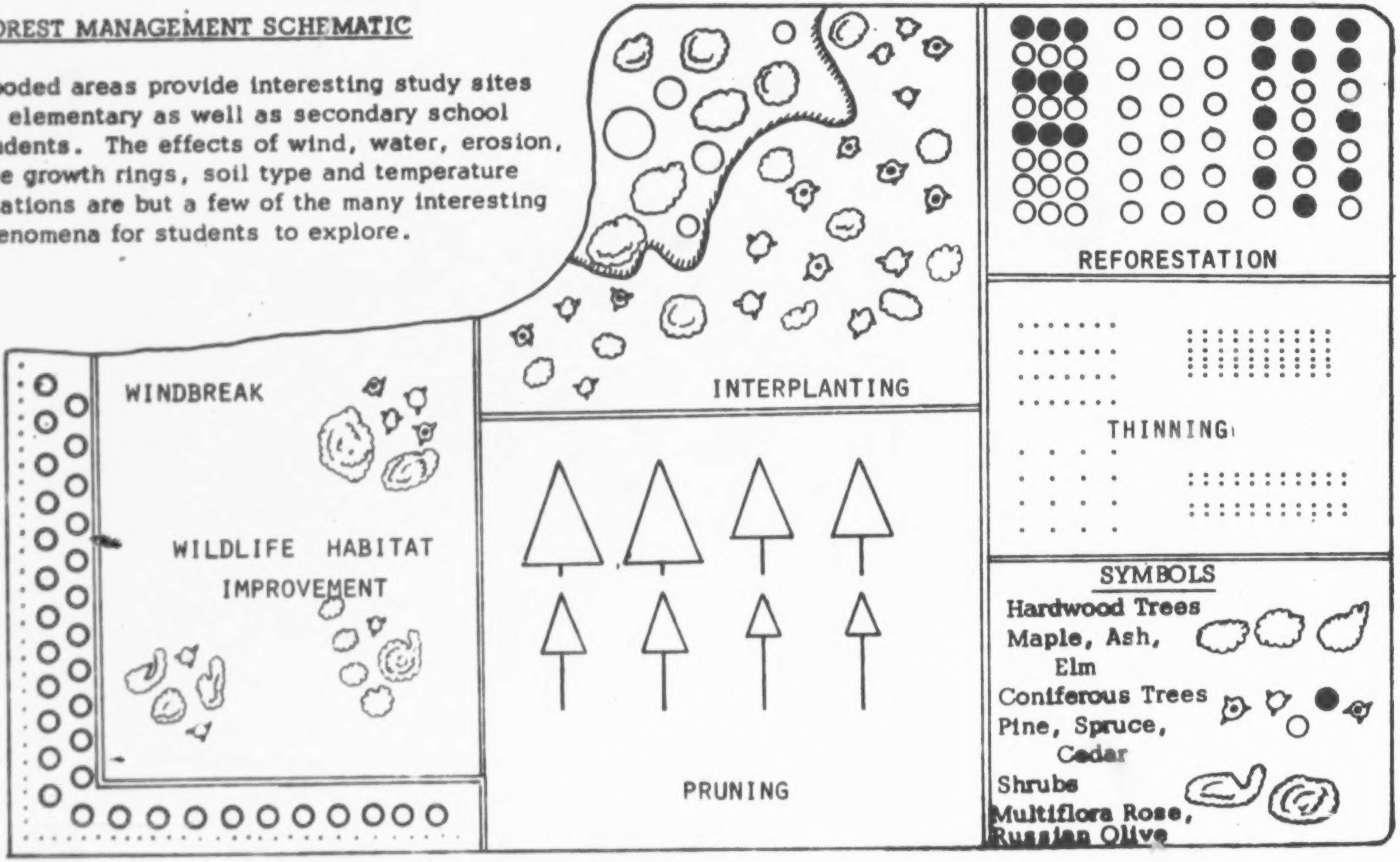
Another alternative you might wish to have the students experiment with is the "plow-perch" method. This technique involves the plowing of a strip approximately 6 ft wide and as long as you wish to have it. Fruit-eating birds will perch on a line strung through the long axis of the strip and "plant" the hedgerow by the deposition of undigested seeds contained in their droppings. Included will be wild cherry, blackberry, dogwood, elder, mulberry and many others. Surprisingly, these "plow-perch" plantings grow almost as fast as the other kinds. They are maintained in the same manner as artificially planted brush areas.

f. Projected reforestation. That portion of the environmental study areas designated for reforestation should be committed to species native to the FLNT area. The included plans for windrow plantings serve a dual purpose: (1) if oriented to border on the park area, they will serve to soften the aesthetic transition to the natural system, and (2) provide multiple opportunities to study microclimates. It might also be planned to try experimental configurations by using differing species or numbers of rows of trees and low-growing shrubs.

g. Mapping and location activities. Outdoor mapping is an effective means of increasing one's awareness of his environs. Most students find this type of outdoor activity rewarding and interesting. Techniques and skills involved in compass work, mapping, reading topographic maps, distance or height estimation and use of improvised transit equipment can readily be taught on most sites. Outdoor studies can be more meaningful with the aid of student-produced maps and diagrams showing location or altitudinal variations. Relative positioning will reveal many of the secrets of plants and animals on your study areas. With minimal preparation, the elementary teacher will find many uses for the techniques and experiences gleaned from outdoor mapping.

FOREST MANAGEMENT SCHEMATIC

Wooded areas provide interesting study sites for elementary as well as secondary school students. The effects of wind, water, erosion, tree growth rings, soil type and temperature relations are but a few of the many interesting phenomena for students to explore.


REFORESTATION
THINNING
INTERPLANTING
WINDBREAK
WILDLIFE HABITAT IMPROVEMENT
PRUNING
SYMBOLS
Hardwood Trees
Maple, Ash, Elm
Coniferous Trees
Pine, Spruce, Cedar
Shrubs
Multiflora Rose, Russian Olive

Interplanting - Replant patches where previous plantings failed.
Pruning - Prune coniferous species to various heights.
Thinning - Thin existing plantation using a variety of spacing alternatives.
Reforestation - Replant this area to a variety of species suited to the area. Plant at different spacing, e.g. 4x4, 6x6 etc.

FT. LINCOLN NEW TOWN

ENVIRONMENTAL EDUCATION FACILITIES
Prepared by the
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MINNEAPOLIS, MINNESOTA 5542

Mapping activities are not limited to the outdoors. Activities can and should be carried on inside the school. It is recommended that fundamentals and general instruction be practiced in the classroom prior to moving outside. The reader is referred to E.S.C.'s "Contour Mapping" as a reference for mapping lessons.

A study area modeled after the FLNT site could be designed to contain contour intervals equivalent to approximately four feet. During the FLNT development, this facility could be created in less than an hour of bulldozing. This plot should be covered with spring-cut prairie sod to: (1) prevent erosion and (2) allow the prairie annuals to re-seed themselves by fall. The hill should be designed to provide for multiple mapping experiences. Provision for convex-concave slopes, ridge and saddle formations will introduce the young students to major land formations. Several logs might be positioned on each slope to provide for moss and saprophyte contrasts. E.S.C.'s "Micro-climates" will reveal some interesting things that are happening to your mound.

The above model mound would not be limited to science activities. Social studies units could provide for the students (1) following the development of their new community, (2) reconstructing the FLNT facility to relook at pertinent developments within their community, and (3) redesigning the facility as an exercise of their interpretation of how the region might have been used.

h. Implementation. It is our recommendation that suggestions for the various systems examples be experimented with on a small scale near the 1st Facility. Experience with the pilot program will give the staff, community and planners adequate feedback to detemine their relative merits and functional use in the total program. Positioning of the study areas might well be changed to take alternative advantage of the contour and orientation. Plantings might be varied to better complement the continuum of successional alternatives, i.e. mirror-image plantings, heterogeneous vs. homogeneous reforestation (conifer/deciduous), or small scale simulation models of the Anacostia river forested area.

FLNT Satellite Facilities. Surrounding the FLNT urban redevelopment project are several natural resources which could and should play a key role in the environmental education program implemented here at the 1st Facility and subsequent schools. These resources are the Anacostia River forest areas, the National Arboretum and the Kenilworth Aquatic Gardens.

a. Anacostia River complex. This resource provides multiple opportunities for investigating successional patterns in the river area. Transect activities can be run in these sections to determine species relations and distribution in terms of a variable, i.e. the river. Natural communities in the area should be representative of those species which would ordinarily move into this type of pattern. The serial displacement of species from the water's edge to the higher, drier ground will provide a good opportunity to establish successional models in terms of water variables. The sandy beaches will contain a number of shells representative of the populations of mollusks inhabiting the area. Studies can be done on these in terms of species diversity, mortality and migration relative to fluctuations in the water level. Also, the effects of periodic flooding on the plant and animal inhabitants of the area can be studied.

b. Kenilworth Aquatic Gardens. The garden complex is next to the Anacostia River and located to the immediate SE of the FLNT redevelopment site. There are 11 acres of ponds that are planted with a number of exotic water plants and other native species of plants and animals typical of pond, marsh and river habitats of the Atlantic coastal plains. Groups visiting the area would be able to do studies on pond waters which would be a valuable resource in studying types of plant and animal life different from that near the FLNT site area. In addition to the aquatic insects and plants that would be available there, the students would also have the opportunity to observe exotic water plants which have been brought in over the years by W.B. Shaw, who started the particular project, and later on by his daughter, Mrs. L. Helen Fowler. The variety of plants present in this resource and also the rather picturesque setting would lend itself well to painting, graphic arts, and photography.

c. National Arboretum. The National Arboretum would provide a number of quality experiences in ecology. The natural woods preserved here which would show the succession of Atlantic Coast climax forests on a larger scale than can be seen on the FLNT site. This would be a particularly good resource for students interested in reforestation by allowing the students to also predict what might happen with their own environmental study areas through the course of reforestation. The visitations here might also help them in formulating a list of the types of trees and relative patterns in which they might plant them prior to actually implementing the reforestation of the projected study areas. Also present are a number of exotics and examples of nursery practices which would point out to the learners some of the management practices possible when one considers the sound mechanics of the environment prior to undertaking reforestation projects.

Perhaps the most valuable aspect of having these three resources within such a reasonable distance of the redevelopment project is that visitation to these sites would be a relatively simple undertaking. Also to be considered is the fact that, should the environmental study areas become a reality on the FLNT site, the opportunity to observe much larger natural systems in terms of what they have observed on their own reforestation or wild areas, would help them to see how well their model of operation in nature agrees with observations made on the larger systems. These types of experiences would then serve to help broaden students' concepts of environment and its workings on a much larger scale by (1) starting with small examples in and around the school site, (2) more comprehensive observations on the proposed natural areas in the redevelopment and (3) observations on still larger systems in the surrounding area. This would bring the learners to a point where they are ready to consider implications of the above on perhaps a much larger scale. Hopefully this would mean a readiness to nove to national and international implications of environment and management.

III. STAFF DEVELOPMENT

The staff of the first FLNT educational facility will, to a great extent be the prime determiners of program success. A realistic and rigorous selection process will help assure the acquisition of a competent and confident group. However, if the program reflects the suggestions for environmental education contained herein, an intensive inservice program must be developed and implemented prior to involving children in the educational program.

The objectives of such an inservice program would be to:

a. Bring teachers into contact with the innovative and educational characteristics of the facility.

b. Engage them as they might in turn engage their students in experiences based upon the utilization of any number of the unique educational contrivances and community resources. These encounters can be planned to include all staff in the following procedures:

(1) Pre-select specific experiences representing various developmental levels. (Use the criterion of "adult challenge" to aid in making activity selections.)

(2) Present to teachers the procedural "thread" as teachers might present it to children. The thread might be merely a set of directions, suggestions, or display of unique materials from which an activity could be fashioned.

(3) Engage teachers in the selected activity but do not require them to role play.

(4) Follow through with the activity until a natural intermediate completion point is reached or until participants' interest level drops.

(5) As a group, react immediately to the activitv, its implications for the particular developmental level represented, predict possible child response, relate it to other areas of the curriculum and evaluate its imapct on and import to the level represented.

(6) Assess overall feasibility of using activity with children in its present or a modified form.

c. Cause inservice leaders to act as teaching models displaying those behaviors and strategies which are judged most likely to effect desired learning responses in children.

d. Schedule time wherein staff may be provided the same materials used during the inservice, equipment and students for microteaching with video equipment to be follow'ed by review and critique of the small group practice session. Involve children in the critique: their opinions are candid and therefore useful.

e. Plan for staff involvement in a sufficient number of curriculum activities, (as outlined above), properly sequenced so that the skeleton or framework of an emergent model program is experienced by all staff.

f. Cause staff to seek modes of linking these major experiences in such a way that the emerging program is not contrived but authentic. Alternative pathways bridging activities must be proposed in view of program individualization objectives.

g. Encourage and permit staff to come to grips with the kinds of environmental considerations which have guided curriculum selection, building modification and use, instructional philosophy and larger ecological and educational issues.

h. All of the preceding must be done on a release time basis with full support and commitment from the adminstration who should also be involved in the same fashion as are teachers.

IV CONCLUSIONS

Failure of the Present System. Evidence would seem to indicate that the past connotation of "conservation" as "wise use" is intellectually unexciting and ineffectual as a functional change agent. Most current programs are primarily oriented toward basic resources and a rural perspective. There has been a general failure to concede that the real power of decision in our democracy rests in the hands of the urbanite. Following is a list of observed inadequacies in "conservation education" per se:

1. There exists no coherent philosophy of environmental education.

2. There is a lack of teacher interest and background training.

3. There is a conspicuous lack of cooperative, enlightened school administrators.

4. No comprehensive school program in environmental education exists at present.

5. There is a paucity of curricular software relating to environmental education.

6. Environmental education consultants are needed in all levels of the educational system.

7. Collegiate training programs are inadequate.

8. There is no effective leadership or coordination in the area of environmental education which would provide for quality training programs and information systems.

Even within the present system, some resources are given a disproportionate share of attention. Michigan studies show that soil, minerals and water share 24% of the total titles of free and/or inexpensive materials distributed to the public. Plants and animals claim 37% of the remaining total. Only 18% of the above have a readibility below the 7th grade. There is an apalling lack of educational materials on such serious problems as population, pollution, zoning and urban human relations.

Clearly, there exists a need for an urban populace that is knowledgeable in the socio-ecological aspects of environmental mechanics. In the paragraphs below, we have listed several areas of special concern relative to the development of a truly functional environmental education program. These considerations express a rationale for the implementation of such a program.

Urban Emphasis. There exists an operative evolution of our environment towards an increased density. By 1980, it is estimated that 80% of the American population will probably live in an urban environment. A rural-oriented living will no longer be a dominant influence in our lives. Man is also evolving behaviorly; his normal way of life is to be inside a group. Those not so inclined may find themselves treated for an antisocial syndrome. Interestingly enough, it has been observed that bees of social species appear unable to make the simplest decision unless in a group of about 12 (approximately the same optimum size of a board of directors). Further, they are unable to survive as a population unless they number at least 200 to share in the division of labor.

It is increasingly evident that we must shortly attach meaningful values to differing alternatives of land use. An informed populace will have to make decisions, explore and validate the above on matters of public and individual concern. A balance must be struck between the dynamic forces and demands of urban techniques and the equally compelling imperatives of managing the natural environment on a self-sustaining, self-renewing basis. The economy of our urbanized society is based upon gigantic consumption of energy. Long term consequences of present consumptive methods mandate that we rethink this issue relatively soon.

The very nature of our system of government also mandates that a major portion of the total effort directed toward the preservation and restoration of environment for the provision of quality experience is most effectively dealt with at local levels by informed and motivated individuals. Planned educational experiences should therefore provide for exposure to fundamental environmental mechanics to promote an effective, functional awareness.

Leisure, Sensitivity and Expression. Man is unique in his meddling with local universe affairs. A child's curiosity spans this universe in terms of diversity. He is capable of apprehending, comprehending and coordinating an ever-expanding inventory of experiences. Many educational systems and social circumstances stultify this uniqueness; in many instances we have deliberately instituted a process leading only to narrow specialization. This situation is dangerous and may lead to the intellectual extinction of creativity, substituting technical specialization in its stead. Current concern on the above has been expressed by Buckminster Fuller in "An Operating Manual for Spaceship Earth," and Desmond Morris in "The Naked Ape."

There is insufficient evidence at present to permit a realistic estimation of the role of leisure in our future urban society. One is prone to agree however, with the current popular projections of shortened working hours and the release of time for purposes other than making a living. Some humanists suggest that an expansion of interest and participation in all art forms will occupy this void provided that (1) the extant economic system makes this feasible and (2) the future structure of society is one which makes access to the arts an essential part of the cultural and educational opportunities of our entire population. Expression of sensitivity to one's environs might well be a means of reinforcing a functional awareness of environmental mechanics and perhaps promote sound management thereof.

The creation of cultural content is a function of the arts. What is done in the educational and social systems has significant impact on the direction such creativity will take. Man's relative openness and readiness dictates that which the arts will contribute to his total experience. A need is indicated for expanding our educational system beyond the present function of socializing and academizing the young to involve more of the populace with the experiences of all of the arts.

For example, one of the functions of art and of education is to teach children the relative beauty and worth of a democratic society. A second function might well be to equip them to create a similar system out of whatever environment they might find themselves in. School children today have a more complex image of the atom than the highest scholars of the 19th century. However, examination of practically any public statement reveals all but the most naive, stylized image of man.

Expression of self and an increased perception via the arts may alleviate this inconsistancy through the evolution of new conceptualizations of what constitutes reality. Perhaps we should create a favorable environment for the development of a new vocabulary of symbolic form. Use of the proposed solar area for science, music, painting, sculpture, theater and dance activities should provide a needed point of departure. Abandonment of the visual conventions will have the advantage of (1) a new aesthetic conception of cultural antiquity and (2) reinforcing the learner's perceptive environment in terms of sensory, emotional and cognitive experiences.

Interrelated Operative Systems of Knowledge. Potential learners attending the FLNT 1st Facility will spin 100 miles and travel 1,000 linear miles in space per minute. Perhaps this will not measurably effect their grades in art, but it is a fact of their existance in a nonsimultaneous universe of change and energy events.

It is perhaps a serious fundamental mistake to consider all knowledge in some singular mode, organized into verbal categories. Reconstruction of subject matter into operative systems which stress interdependancy of component elements, including man in a common environment, might provide for more meaningful data to promote discussion of alternatives for solutions to some of our problems.

There is every evidence that mankind is in need of a socio-ecological sensitivity that will make it intellectually respectful to be both aware of the future and optimistic about coping with it. An operational system of educational precepts is needed which teaches criticism, intensity, sensibility and personal action. We need a system of understandable mathematical symbols and manageable concepts that will permit anyone to enter the intellectual community. This will be realized as soon as knowledge is (1) allowed to be intuitive and sensory in origin and (2) its intellectual roots are seen to be in various kinds of perceptive personal experience. Realization of the above will eliminate the present expressive stratification which is neither real nor philosophically justified.

Dobzhansky has stated that by changing what he knows about the world, man changes the world he knows, and by changing the world in which he lives, man changes himself. Man's image of the future is a psychological phenomenon which may manifest itself in the form of aspirations, hopes, fears, expectations or ideals. It may be part of a religious, ethical, philosophical, or political creed. The above are significant characteristics of any civilization. An "anti-hope" image of the future does not furnish the inertial drive needed to propel a culture through the challenge of a changing environment.

Educational specialization precludes comprehensive thinking. There is need for the formulation of a core of knowledge and learning directed toward the mobilization and coordination of relavent technical means for the satisfaction of a particular functional aim. This would be best realized through an inquiry-oriented problems approach to knowledge that cuts across the bastardized boundaries of disciplines established to satisfy our administrative bent.

Evidence suggests that children are ready for conceptual learning in the earliest grades. Instructional materials might well consist of a series of local case studies or encounters with mankind which result in indepth studies of selected regions or topics (re: the Vasser program entitled "The River").

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Data gathering and interpretive aspects of such a program would provide empirical information about resource problems emphasizing their relationship to the total environment. Learners must play an active role in data acquisition during which time attitudes are formed. Cumulative information formalized into operative models by the students could then be applied to analogous situations.

Environmental Education IN the Environment. Experience would seem to imply that no philosophy yet articulated in this nation is adequate to promote an urban environment capable of coping with change. There is no general comprehension to unite the best in conflicting issues. Present philosophies are not sensitive to the dimension of quality in natural and man-made elements in the environment nor disposed towards coping with its inherent problems. We have been unable to attach real values to 'abstract" resources such as air and water.

Unfortunately, little or no thought has been given to site development for outdoor and community learning centers to enhance school curricula. Development insures that natural vegetation is stripped from the land, water areas destroyed, learning opportunities limited and the microclimates made more severe. Provision is then made for artificial islands of green.

Land plays a key role in helping youth and adults develop an understanding of environmental mechanics. 'Synergy" has been defined by Fuller as the behavior of whole systems unpredicted by the separately observed behaviors of any of the system's separate parts or subassembly thereof.

Education purports to design a series of sequential experiences for the learner to imbue him with an environmental sensitivity to the above, but it provides him with a man-dominated natural system of green in the form of a sterile park. How can this emasculated system do anything but serve to reinforce the misconception of man"s total dominance over the environment? We have provided the learner with a philosophical windmill and clothed him in a mail of biased data.

The non-use of open space and real communities for the study of socio-ecological mechanics is philosophically akin to establishing museums or mosoleums for the dead. Most are sterile and stand empty of all except expensive and respectable forms which lack internal, vibrant, living energy to promote new sensitivities in the human community. A "parks only" ideological stand constitutes a requiem for the real mechanics of society and the environment.

Restoration of land for the specific purpose of demonstrating operations in the environment on a small scale will provide the learner with bits of actual data on subsystems of our environment. This is at least a start in understanding the workings of our surroundings. The interplay of a child's total educational experiences, when related to his surroundings, will increase his sensitivity to the environment.

V. SUMMARY

Introduction. Environmental education recognizes two related, continuously operating propositions, vis-a-vis the child in his setting:

1. School achievement is conditioned by a child's environment, particularly his home and family environment. However, the school to school variation in achievement among children is almost wholly due to the social environment provided by the school(s) in question. Included here are:

(a) the educational backgrounds and aspirations of other students in the school, and

(b) the educational backgrounds and attainments of the teachers in the school.

2. The child (student) is always in an environment and continually seeks to modify it in an attempt to find a unique place (niche) within it for himself.

Given these operating propositions, an educational program should be so planned as to potentiate the likelihood that a child will find, discover, and/or create a "niche" for himself in his environment.

The role of the school becomes one of expanding the array of choices open to the child. It follows that not all selections can take place within the boundaries of a school room; other environments should be explored, examined, measured, described, modified and utilized. However, those planning experiences for youngsters should continually bear in mind that activities should be authentic, not contrived exercises. To remove a child from a "school" to, for example, a natural area, should be done only if what is to be accomplished cannot be done elsewhere. There must also be something definite to do when the child gets there. In addition, that which is done must be developed by children rather than imposed by a teacher-expert.

Conversely placing a child in the school setting should also be an option open to those in a position to make a decision. If a child is to study something of seasonal changes in the night sky, he should see the night sky - provision should be made for this. Perhaps more realistically, if a youngster wants to find out the average number and kind of pets kept by those living in a certain area, he should go to that area and gather his data.

There should, then, be a great degree o f freedom to move back and forth from school facility to community to natural areas and back again. And the notion that each component of the environment, e.g. school, home, park, etc., exists as an entity separate and related should be erased. The child, school, community, region, earth, continuum should be stressed until it is a natural conception for both adults and .children. It is worth noting that one of the most powerful of ecological concepts is that of interdependence; a child's understanding of this construct can only occur if his experiences are themselves interrelated by design, either his or his teacher's.

A sense of interdependence develops from that of dependence. One should proceed to the other. This is true if responsible choice becomes a part of the educational program. The child must be permitted to make decisions concerning his own behavior. As a child's sense of interdependence grows, his societal-self is shaped. He perceives his worth as an individual viewing himself in an increasingly positive fashion because he learns he is a needed link in a chain or web called society. Adults must support the child's emerging idea of self. It is only with approval and reinforcement from peers and adults that a child can undergo the internal cumulative changes necessary to construct a concept of self in relation to environment.

The body of this report is a set of statements - prescriptive statements - about learning and the environment. It is an ecological point of view about how the process of education ought to proceed with the exception of recommendations on structural modifications. It is deliberately general in nature. Specificity does not come until one details the exact set of learning experiences to which a child will be exposed. Or, more importantly, it is only when a child makes his own experience choices from among those provided for will we know the nature of the educational program and something of its boundaries. Yet we must still provide for those choices and we must still give children the euqipment by which decisions are made. This becomes the basis of the educational program; the activities and experiences plus the development of skills to evaluate and differentiate choices in terms of the ultimate consequences of one's responsive decisions. Perhaps some of the following considerations can serve as criteria for guiding the thoughts of FLNT program planners.

Educational Experiences. Choose activities which stress the use of ecological techinques for data development including mapping, surveying, sampling, measuring, etc. These techniques will permit reasonably objective ideas of the environment to be formed. In conjunction with data generation apply decision making techniques for choice and value situations. Encourage the development of activities which are sufficiently open-ended to admit of interpretation, qualification and question. Employ games and encourage role playing situations. Selected activities should work to eradicate the artificial barriers between the disciplines so that children perceive an integrity rather than a fragmentation to knowledge.

Select experiences and activities for their authenticity and potential worth to an individual. This is not to say that for example those things considered play are not of value. Indeed, play or the ability to play is very much a part of the natural inclination of an individual. Natural inclinations of children should not be dismissed, rather staff should plan to capitalize upon them whenever possible.

Each activity and experience should contribute ultimately toward the development of a child's fitness - niche - in his environment, build diversity and richness into the interior school environment and spend increasing amounts of time outside of the school so that a child's idea of the total environment is increasingly congruent with what is.

Schools. A school is a fact. But the building itself; the physical environment ;can be modified in a way such that it will facilitate "opensure" rather than "closure." Use the building fully to further particular ends. Give future consideration to the dispersion of classrooms about the community. Decentralizing the system may lead to real individualization in the program.

Biological and Sociological Climate. Choose staff also upon the basis of what they might contribute to the biological or social climate of the building. The quality of the interaction among staff members and between child and staff will be the most success significant determinant of student success. Select staff with the greatest of concern for their ability to relate effectively to children and to a greatly modified learning environment and style.

Consider the fact that the building's professional staff will form an adult milieu somewhat unlike that with which many of the children will be familiar. Plan to provide for as is feasible, a mixture of adults representing a true community cross section and then permit the children to be a part of total staff interaction.

Increase the number of activities the child can do which bring him into contact with the adult sector of the community apart from the school. Productive interaction at this level may help enhance a child's own sense of worthiness and usefullness in a setting other than school.

Environmental Education. Evidence suggests that;children are ready for conceptual learning in the earliest grades. Instructional materials might well consist of a series of local case studies or encounters with mankind which result in indepth studies of selected regions or topics. Data gathering on interpretive aspects of such a program would provide empirical information about resource problems, emphasizing their relationship to the total environment. Learners must play an active role in data acquisition and attitudes should be stressed. Cumulative information formalized into operative models by the learners could then be applied to analogous situations.

An emphasis on principles rather than routine skills or rule of thumb procedures will promote the ability to operate in concrete situations with full sensitivity to their novelty and application of principles.

Technical means should be used as just that and not as ends, recognizing that communities are the ends that means are designed to serve.

Knowledge should be operative in some direct way for human welfare; a city is intended to serve people; people are not intended to serve cities.

One must have the ability to exercise restraint and descriminating self-limitation. One must also recognize self limitations and possess the wisdom to seek appropriate help.

Each person acts not only as an individual but also representatively with an awareness that what he does transcends himself.

CONTRIBUTORS TO THE FUNDING PLAN

Bonnie Cohen, Chief Consultant

Resource Management Corporation, Subcontractor

6. FUNDING PLAN*

6.1 Program Budgeting

Budget estimates for the First Facility are presented in a "program format," unlike the D.C. School System budget, which is predominantly organized into the traditional "line item" format.

With this "line item" format, all major activities displayed are purchases of resources--personnel, equipment, and materials--while the subclasses under these activities merely detailed the specific numbers and quantities of each. Although this format permitted the school decision-maker or the public to know exactly what was being purchased for the educational dollar, purchases were not related to program objectives or specific operating programs of the school system. Under a line item system, one could ask at the end of a fiscal year, "Did we hire 15 teachers at TS 15?" but not, "What did it cost us to improve the learning skill of preschoolers this year and how successful (in terms, for instance, of increased skill levels) were we for that dollar expenditure?"

The program format of the FLNT First Facility budget is designed to give the school administrator a more useful decision-making instrument (see Figure 6-1). However, the "programs" of FLNT are not the traditional ones of reading, writing, and arithmetic. Instead, the curriculum (see the Education Plan, Volumn I) is organized as an organic whole directed at improving the total skill level

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* Prepared by Resource Management Corporation, Bethesda, Maryland.

Object Class	Activity						Total
	General Administration	Stage 1	Stage 2	Stages 3-4	Staff Development	Community	
Personnel Level 1 Level 2 Level 3 Level 4 Level 5 Stipends (students)							
Office Equipment Capitalized Not Capitalized							
Classroom Equipment Capitalized Not Capitalized							
Office Supplies and Materials							
Classroom Supplies and Materials							
Communication and Printing Communications Printing							
Travel In-Town, Professional Out-of-Town, Professional In-Town, Students							
Consultants and Contracts Consultants Contracts							
Operation and Maintenance Personnel Supplies and Materials							
Lunch Program							
Total							

Figure 6-1 PROGRAM FORMAT FLNT BUDGET

of children at different learning stages. For example, an arithmetic class for a preschooler is also directed to improving the child's reading ability. As a result, the "programs" displayed in Figure 6-1 are the aggregate ones of General Administration, Learning Stages I-IV, Staff Development, and the Community Program--all of which correspond to the distinct educational programs that will operate in the Fort Lincoln First Facility.

Under General Administration are displayed all the costs associated with administering the overall FLNT educational program. The administrative costs associated with a specific learning stage are found under that learning stage. General Administration refers to the administrative activities that support all stages. Under the Stage I-IV (as defined in the Education Plan) appear the total costs of meeting the education objectives of these stages. For instance, displayed under Stage I are all the costs associated with the education of the preschoolers, including administration, teaching, food services, and operation maintenance, etc. Similarly, under the Staff Development and Community Programs are displayed all the costs associated with the operation of these programs.

Within the activities just described, the traditional line items--personnel, equipment, travel, etc.--are then displayed in Figure 6-1. However, instead of being aggregated and viewed as ends, they correspond to the educational objectives (as represented by learning stages) they further. Therefore, with this tool, a decision-maker can ask, for instance, "What is the total cost of improving the total skills of the preschooler?" To take this budget one step further and make cost-effectiveness determinations, it is necessary for those responsible for the design and operation of the different activities to state explicitly their objectives and quantitative goals so that the costs now displayed can be directly related to the attainment of measurable objectives. The costs associated with Stages III and IV are combined in this model since the instructional activities will take place in one area of the facility and the resources (men and materials) of the two learning stages are shared.

Budget estimates, such as shown in Figures 6-2a and 6-2b are only part of a Planning-Programming-Budgeting (PPB) system. In essence, a budget, regardless of format, is only a method for organizing expenditure information. However, by placing the budget in a PPB context, it will become, in addition, a useful instrument of management decision making. In this program budget, as discussed, costs are organized into their related programs and then must be oriented to specific measurable program outputs.

The use of a PPB approach involves analytical tools such as cost-effectiveness analysis, both in the preparation of the budget and in the evaluation of the consequences of particular budgetary decisions. Cost-effectiveness analysis and the careful consideration and specific enumeration of program uncertainties provide the basis for both systematic examination of educational alternatives and their implications and for the administration, assessment, and revision of management decisions.

Likewise, this budget approach should cover a time period of at least five years, thereby depicting the future impact of present decisions. Single-year costs do not indicate the future impact of present program decisions and may,

Object Class	Activity						Total
	General Administration	Stage 1	Stage 2	Stages 3-4	Staff Development	Community	
Personnel							
Level 1							
Level 2							
Level 3					37.61		37.61
Level 4					25.57		25.57
Level 5					15.33		15.33
Stipends (students)					4.30 (1)		4.30
Office Equipment							
Capitalized	6.00	.35	.35	.35			7.05
Not Capitalized							
Classroom Equipment							
Capitalized		23.15	26.26	26.16			75.57
Not Capitalized							
Office Supplies and Materials					1.50		1.50
Classroom Supplies and Materials					2.00		2.00
Communication and Printing							
Communications					2.35(2)		2.35
Printing							
Travel							
In-Town, Professional					.52		.52
Out-of-Town, Professional					2.66		2.66
In-Town, Students							
Consultants and Contracts							
Consultants					45.00		45.00
Contracts					25.80		25.80
Operation and Maintenance							
Personnel							
Supplies and Materials							
Lunch Program							
Total	6.00	23.50	26.61	26.51	162.65	0.0	245.26

Figure 6-2a INVESTMENT COSTS

(1) Student aides, children, and community people.
(2) Includes facility rental.

Object Class	Activity						Total
	General Administration	Stage 1	Stage 2	Stages 3-4	Staff Development	Community	
Personnel							
Level 1	0	0	0	0	0	0	0
Level 2	0	0	0	0	0	0	0
Level 3	50.80	25.40	38.10	50.80	12.70	16.06	193.86
Level 4	0	17.60	26.40	35.20	0	17.90	97.10
Level 5	11.72	23.44	23.44	23.44	0	82.86	164.90
Stipends (students)	0	4.05	2.70	2.70	a	18.00	27.45(1)
Office Equipment							
Capitalized	.60	.04	.04	.04	0	7.50	8.22
Not Capitalized	3.00	.05	.05	.05	0	1.50	4.65
Classroom Equipment							
Capitalized	0	4.63	5.25	5.23	0	0	15.11
Not Capitalized	0	1.25	1.00	1.00	0	0	3.25
Office Supplies and Materials	.80	.30	.30	.30	0	3.00	4.70
Classroom Supplies and Materials	0	35.03	41.47	47.91	0	3.25	127.66
Communication and Printing							
Communications	1.50	.75	.75	.75	0	.75	4.50
Printing	1.75	.75	.75	.75	0	5.00	9.00
Travel							
In-Town, Professional	.18	.04	.06	.09	0	2.59	2.96
Out-of-Town, Professional	1.48	.59	.89	1.33	0	10.36	14.65
In-Town, Students	0	.31	.35	1.16	0	0	1.82
Consultants and Contracts							
Consultants	0	2.31	2.31	2.31	0	13.50	20.43
Contracts	40.00	8.50	5.50	6.00	7.0	50.00	117.00
Operation and Maintenance							
Personnel	7.83	8.47	10.27	12.33	2.00	15.00	55.90
Supplies and Materials	7.83	8.47	10.27	12.33	2.00	15.00	55.90
Lunch Program	0	21.88	29.38	36.25	0	0	87.51
Total	127.49	163.85	199.26	239.82	32.49	262.27	1,025.17

Figure 6-2b ANNUAL OPERATING COSTS

(1) Substitutes 8.80

in fact, hide the fact that this year's decision could significantly reduce flexibility in five years by requiring ever-increasing financial resources.

For this reason, an integral part of a PPB system is long-range planning; this helps and forces a manager to think of his program objectives in terms of his long-run needs. In the school situation, a complete PPB system would allow the decision-maker to determine program priorities and to justify budget requests. Further, since the data and supporting analysis are released to the public, it assists the community in understanding the school system's policies. In the First Facility plan, the operating costs displayed are those costs that will probably be incurred yearly over the next five years. Nevertheless, each year these costs should be updated and revised in light of the preceding year's experience. It cannot be anticipated, however, at this time in what significant way the costs will change each succeeding year, since

- Any changes in the operation of the education program will mean changes in resource requirements and these changes will occur after the program is in operation, and
- Since the school will open with its full enrollment, there is no gradual time-phased increase in enrollment and related costs.

Therefore, the one-year operating costs for FLNT displayed in Figure 6-2b must be considered a typical year's cost to be changed in the light of actual experience. The one-time investment costs are enumerated in Figure 6-2a.

A PPB system does not provide all the right answers for the problems of any large organization like FLNT. It does not automatically indicate the right decision or alternative; it is simply an analytical process--a process that, as one authority in the field states, "is directed toward assisting the decision-maker in such a way that his intuition and judgment are better than they would be without the results of the analysis."[1]

6.2 Automated Program Budget Model

The program budget structure discussed above was automated to simplify and to make more accurate the calculation of program budget estimates for alternative education plans during the design of the FLNT education program. This is the first time in the D.C. School System that a program budget has been automated. This permits the educational planner to perceive immediately the budgetary and resource consequences of a change in program design, be it a curriculum change, a facility change, or a policy change.

The outputs and inputs of this model are discussed in the following sections. The model is programmed in FORTRAN IV and operates on the Burroughs 5500 computer through the COMNET time-sharing system.

6.2.1 Costs by Activity

The complete cost model displayed in Appendix A has the capacity to compute and display both investment and operating costs. The investment costs for any facility, and in this case for the First Facility, are defined as those costs incurred before the opening of the school to the students. In the case of the First Facility, the major investment costs are staff training and the ordering of capital equipment (see Figure 6-2a). The initial staff training program (see Volume II, Section 2) will involve the entire staff and will occur prior to the September opening of the school. The capital equipment involved in instruction (audiovisual equipment, etc.; see Education Plan, Volume I, Section 1) must be ordered in FY 1970 to be available for the opening of the school in September FY 1971.

Operating costs on the other hand reflect the expenditures incurred during the year the school is open. The breakdown, as stated previously, is by activity--General Administration, Stages of Instruction, Staff Training, and Community. The costs for each activity are detailed by object classes. (These operating costs are summarized in Figure 6-2b and are also found in the cost model printout Appendix A). Each activity has under it object classes to help break out the cost components for references and analyses.

General Administration, as previously discussed, is the activity devoted to the central organization of the school system; in the case of the First Facility, it is the resources devoted to the central administration of the school. This includes the offices of the general coordinator and his assistants.

Stages of Instruction are the activities concerned with the actual educational process. The first Ft. Lincoln School will encompass learning stages I-IV, which correspond in age level to the traditional preschool and kindergarten through the six grades. This model breakdown facilitates budgetary decision making on the basis of overall skill levels achieved by studies instead of simple money spent for so many teachers or so many library books. Although the cost model can display simultaneously the costs associated with General Administration, Staff Development, Community, and seven learning stages, for the FLNT First Facility it was only necessary to document the costs of learning stages I-IV.

Staff Training involves acquainting the teaching staff at FLNT School with new methods and new instructional aids. This includes as an investment cost a full-time training session before the opening of the school and a continuing, part-time program after classes begin. (This continuing program is reflected in operating costs.)

Community Participation involves directly linking the community with the school and the educational process. The community participants are planning a fund-raising program and a reading-assistance program, and adult education classes are being planned as an integral part of the First Facility program plan.

These above activities are costed by using object classes--a detailed breakdown of component costs. With the use of object classes, it is possible to get a complete picture of resources applied to each activity and to obtain total costs across activity, i.e., total capitalized equipment cost, total supplies and materials cost, total operating and maintenance costs, etc.

Table 6-1 summarizes the FLNT school Activities, while Table 6-2 presents the model cost categories.

Table 6-1

SCHOOL ACTIVITIES

General Administration
Stage 1 Instruction
Stage 2 Instruction
Stage 3, 4 Instruction
Stage 5 Instruction
Stage 6 Instruction
Stage 7 Instruction
Staff Training
Community Activities

Table 6-2

COST CATEGORIES*

INVESTMENT COSTS

Personnel Acquisition
Personnel (Staff Training)
Classroom Equipment--Capitalized
Office Equipment--Capitalized
Classroom Supplies & Materials
Office Supplies & Materials
Communications & Printing
Facility Rental (Staff Training)
In-Town Travel, Professionals
Out-of-Town Travel, Professionals
Consultants
Contracts
Operations & Maintenance Supplies

ANNUAL OPERATING COSTS

Personnel
Personnel Acquisition
Classroom Equipment--Capitalized
Office Equipment--Capitalized
Classroom Equipment--Not Capitalized
Office Equipment--Not Capitalized
Classroom Supplies & Materials
Office Supplies & Materials
Communications & Printing
Facility Rental
In-Town Travel, Professionals
In-Town Travel, Students
Out-of-Town Travel, Professionals
Consultants
Contracts
Operations & Maintenance
Lunch Program
Food (Community Activities)

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* In the Fort Lincoln application of this model, facility construction costs were not included. However, this category of costs could be easily added.

6.2.2 Object Classes

6.2.2.1 Personnel

Because of the personnel structure planned for the school, the budget model was developed with five personnel levels, which approximate the salary levels of the D. C. School System. They are as follows:

- Level I: This includes those who hold positions ranging from that of elementary school principal to that of assistant superintendent. The salary-plus benefits range from $15,500-$19,300. In the computation, the average figure of $17,800 was used as an annual salary figure.
- Level II: Second highest level. In the D. C. School System, this level of personnel includes assistant principals, supervising directors, or principals. The total compensation ranges from $14,300-$15,500. In the computation, the average annual salary figure of $8,800 was used.
- Level III: This level in the D. C. School System would include master teachers whose total compensation ranges from $10,700-$14,300. In the computation, the average figure of $12,700 was used.
- Level IV: This level in the D. C. School System would include base teachers, librarians, experienced secretaries, and head custodians and engineers. The total compensation ranges from $7,000-$10,700. In the computation, the average figure of $8,800 was used.

- Level V: Lowest level. This level in the D. C. School System includes teacher aides, clerks, and custodian assistants whose compensation ranges from $5,400-$6,000. In the calculation, the average figure of $5,860 was used.
- Students: Some students will be employed part time in the facility at $1.50/hour to provide instructional support (see Education Plan, Volume I.)

Many people on the faculty may be employed part time. For ease in computation, their positions are translated into full-time equivalents. For example, three people each working one-third time equal one full-time person. For detailed specifications of the people and how they will be used, refer to Organization/Staffing Plan, Volume II, Section 2. The use of an average compensation figure at this time provides sufficient funds for salary and benefits. After operation is under way and individuals of different skills are hired at specific salary levels, these figures will represent actual salaries plus benefits.

In addition to the full-time administrative and instructional staff, the personnel cost model includes children and community participants who will receive stipends and daily wages for part-time work in the school.

The personnel object class includes the capacity to compute a personnel acquisition cost to ensure funds for new teacher recruitment every year. This item appears only in the annual operating budget. First year experience will allow those concerned to estimate recruitment costs per type of person recruited and compute the funds needed in succeeding years.

6.2.2.2 Capitalized and Noncapitalized Equipment

Capitalized and Noncapitalized Classroom and Office Equipment are categories that always require additional explanation in financial accounting of school systems. The District of Columbia School Board defines equipment as:

> "A material item of a non-expendable nature such as a built-in facility, a movable or fixed unit of furniture, an instrument or apparatus, a machine, an instructional skill-training device, or a set of small articles, whose parts are replaceable or repairable, the whole retaining its identity and utility over a period of time which is characteristic of and definable for items of this class."[2]

Once an item is classified as equipment, it is again classified as either capitalized or noncapitalized equipment. The D.C. Board defines capitalized equipment as that being purchased for the first time and noncapitalized equipment as the replacements. For planning the Fort Lincoln First Facility, however, we have slightly changed this definition. The basic equipment definition is the same, but capitalized equipment, for our purposes, includes that equipment purchased for $100 or more and having a useful life of longer than a year, while noncapitalized equipment is that which costs less than $100 and lasts about one year.

We have included under Equipment the same items the D.C. School System includes--typewriters, movie projectors, Language Masters, etc.--with two exceptions. Textbooks and library books are included in the equipment category according to the D.C. School Board Office. For the purposes of our planning effort, texts and other books have been included under recurring and non-recurring supplies. A discussion of this point appears below. Second, school furniture (desks, chairs, etc.) is classified under equipment by D.C.--but for our purposes these costs appear under the capital outlay budget available from the Special Projects Division.

It should be noted that because the Fort Lincoln Plan includes some investment and operating costs, capitalized office and noncapitalized and classroom equipment allotments have been included in the investment and operating phases. The money alloted in the operating budget for capitalized equipment is designed to be sufficient for the updating and replacement of the original equipment. (Actual allotments for equipment for all activities are shown in Figures 6-2a and 6-2b and Appendix A).

6.2.2.3 Supplies and Materials

Classroom and office supplies and materials categories also need some clarification. The D. C. Board of Education defines supply as a material item of an expendable nature that is consumed, worn out, or deteriorated in use; or one that loses its identity through fabrication or incorporation into a different or more complex unit or substance. For our planning purposes, we have divided this category into two subgroups:

- Recurring supplies--those that must be ordered each year; and
- Nonrecurring supplies--those that are necessary to the establishment of the facility and may last a few school years.

All the supplies and materials to be costed for Fort Lincoln were determined by the GLC planners with the exception of the "usual" office supplies estimate, which was put together by the Resource Management Corporation. Here are some examples of our supply classifications:

- Classroom Supplies and Materials

- Recurring (for the purposes of replacement and updating)	- Nonrecurring (the initial substantial purchases)
Movie Film	Films
Polaroid Film	Cassettes
Tools	Records
Subscriptions and Periodicals	Overhead Transparancies
Workbooks	Tools
Paperback Books	Aquarium
Textbooks	Encyclopedias
Library Books	Reference Books

It will be noted that textbooks, library books, and workbooks are included under supply and materials instead of equipment as the D. C. Board classifies them.

- Office Supplies and Materials

- Recurring	- Nonrecurring
Paper	Staple Guns
Carbon Paper	Desk Files
Paper Clips	Hole Punch
Pencils	

6.2.2.4 Communications and Printing and Reproduction

This object class includes costs incurred in the publication of reports, directories, manuals, and visitor information in addition to the usual printing and reproduction done at the school facility. The Communications portion includes allotments for postage, telephone, and telegraph services

6.2.2.5 Travel

This object class is broken down into three components:

- Professional in-town travel, which includes all administrators' and teachers' travel in the D.C. area. The allotment is based on a figure of $.10 a mile.
- Student in-town travel includes the cost of student field trips to museums and other points of interest in the Washington area.
- Professional out-of-town travel includes funds for trips to conventions, symposia, or observations of other schools for the administrators and some instructional staff. It is sufficient to permit one out-of-town trip per full-time staff member.

For the first year, in this case as in others, the amount of travel was estimated. These figures can be revised in light of actual costs incurred the first year.

6.2.2.6 Consultants and Contracts

The dollar allotment for consultants is based on the figure of $75 per day and permits the use of both in-town and out-of-town consultants. The amount of time needed was estimated by the educational planners and can be revised after the first year's experience.

Allotments for contracts include money to be spent on objective outside consultants hired to make thorough evaluations of the school and all its programs.

6.2.2.7 Operations and Maintenance

After much consultation with the D.C. Board of Education and other informed sources, the operations and maintenance allotment was put at 14 percent of the total budget. This percentage allotment takes into consideration personnel costs, supplies, and materials, as well as the extended hours of facility operation (see Education Plan for hours per week that the school is open).

6.2.2.8 Lunch Program

The District of Columbia schools provide a hot lunch to all pupils at a cost of about $.50 per pupil. This is the figure used to compute the total lunch program cost for Fort Lincoln First Facility. The dollar allotment is included in the total budget but not in the computation of the per-pupil expenditure. (See Section 6.3.1 for definition of per-pupil costs.)

6.2.3 Other Model Outputs

At the end of the cost category output (Appendix A), further important output will be provided. In this output, the costs are first aggregated by cost category across all activities. For example, the cost of personnel acquisition is summed for general administration, the stages of instruction, staff training, and community activities. Next, student and staff data are given--for example, the total number of students by stage of instruction, the number of staff by level and by activity, and the number of staff receiving annual training. This is followed by various student-staff ratios and the various costs per student figures and staff training costs per staff person trained.

Figure 6-3 presents the total model output structure.

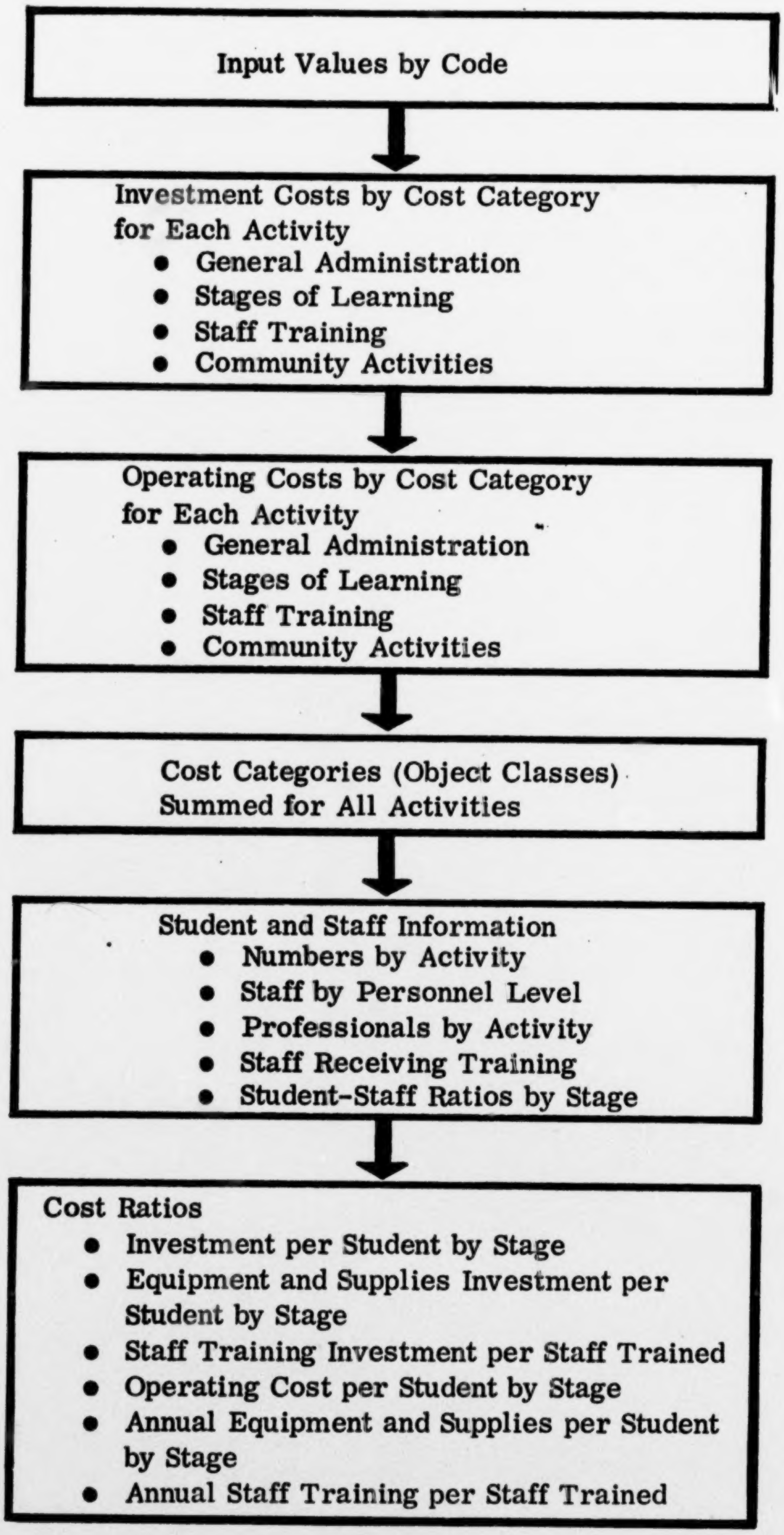
Input Values by Code
Investment Costs by Cost Category for Each Activity
General Administration
Stages of Learning
Staff Training
Community Activities
Operating Costs by Cost Category for Each Activity
General Administration
Stages of Learning
Staff Training
Community Activities
Cost Categories (Object Classes) Summed for All Activities
Student and Staff Information
Numbers by Activity
Staff by Personnel Level
Professionals by Activity
Staff Receiving Training
Student-Staff Ratios by Stage
Cost Ratios
Investment per Student by Stage
Equipment and Supplies Investment per Student by Stage
Staff Training Investment per Staff Trained
Operating Cost per Student by Stage
Annual Equipment and Supplies per Student by Stage
Annual Staff Training per Staff Trained

Figure 6-3 MODEL OUTPUT STRUCTURE

6.3 Documentation

6.3.1 Estimates for Fort Lincoln

At best, the cost of implementing the educational plan for the First Fort Lincoln School Facility can only be an estimate because the plan encompasses new and innovative approaches to education. Furthermore, the objective is to provide sufficient funds, through estimates, for operating the First Facility to permit management flexibility.

The cost estimates that appear in our program budget for the first facility are based on several considerations:

(1) The Fort Lincoln community will be located in the District of Columbia and the schools will be part of the D. C. School System. It was, therefore, decided that these First Facility costs should be similar to that which the D. C. Board of Education has been able to spend on its schools. This is one reason why the per-pupil cost allotment of approximately $965 was used as the primary cost constraint on the operating budget of the first facility. This $965 is an approximation of the fiscal year 1971 per-pupil costs of the D. C. School System. This figure is only an estimate and does not include the Federal per-pupil expenditure. This figure assumes that the First Facility of Ft. Lincoln will be self-sufficient and make no significant demands on the central administration services. The school lunch program is not normally included in per-pupil expenditure. Further, the

special nature of the community-school program--the fact that special facilities have been included in the building and extensive special programs developed--requires special funds. Personnel salaries and costs of operations and maintenance approximate those in the District. However, it must be understood that the costs for Fort Lincoln will not completely mirror D. C. costs. Because of the uniqueness of the Education Plan, certain departures from the traditional cost allocations will be strikingly evident. This is especially true of equipment and supply costs, since approximately 52 percent of Fort Lincoln's operating budget is spent on personnel while 21 percent is spent on equipment and supplies. In this case, the personnel allocation is a lower percentage than in most school budgets.

(2) Each object class dollar allotment used in an estimate is based on similar costs and rates in the D. C. School System plus the new resource requirements of the school. We believe that the dollar estimates provided will be ample in total but that experience will dictate whether funds must be reallocated within the object classes. It will not be until the operation is underway that the estimates used can be refined and costs firmed up to give a more complete and accurate picture of the actual budgetary requirements.

6.4 Selected Data Values

When reading through the model budget in Appendix A and Figures 6-2a and 6-2b, it becomes evident that some form of summary must be included to get an overview of costs for the whole system as well as total component costs. This summarization is programmed into the model and is the last section of the computer output, which is called "Selected Data."

As can be seen in Appendix A, investment and operating object classes across each activity have been aggregated. With these data, it is possible to obtain a picture of the main cost components within the budget. In the annual operating budget picture, the big cost components are personnel compensation, classroom supplies and materials, and contracts. In addition to the cost aggregation across activities, many other useful ratios and summary data are given. A breakout of the total staff by personnel level as well as by activity provides a complete manpower profile as well as a picture of the different personnel requirements by activity. It can be seen that Stage I has the greatest number of staff; this is explained by the fact that this stage has the youngest children in the facility. To provide further information, the total number of professional staff is broken out by activity, so it is easy to see where the certified staff (staff above Level 5) is placed.

Staff-to-student ratios are included in these summary statistics to give the analyst a better picture of the personnel requirements based on the enrollment figure of 700 students. The traditional ratio of professional staff per student (professional staff being defined as personnel above Level 5) is given in addition to total staff per student. Both are presented by activity.

Because of the innovative nature of this budget's investment phase, it was thought that the total cost should be related to the total student enrollment. The investment cost per student has been computed to give a detailed picture of the investment costs by activity. As can be seen, more investment dollars were spent per Stage I student than per student in the other two stages. To give more meaning to the total staff training allotment, these special outputs include a breakout of the investment cost per trainee.

Finally, the total operating cost per student is shown. This figure does not exceed $965 per pupil (the estimated figure that the D. C. School System can expect for the next fiscal year).

All these figures help to give a complete picture of the facility costs for Fort Lincoln. Aggregate investment and operating costs, personnel ratios, per-pupil expenditures, and equipment and supply costs per student can give administrators and educational specialists a better understanding of the costs of implementing an educational program such as the one envisioned. These statistics can be the best tools for analysis. Once operation is underway, expenditures can be checked against these estimates, and budget requests for further years can be modified or changed depending upon changes in staff, student enrollment, or program additions and modifications.

6.5 The Program Budgeting Process

Effective program budgeting requires the participation of not only the "budgeteers" and business managers of Fort Lincoln but also those directly involved in the daily operations of the school and the education program. As discussed, this program budget is organized in the activities of General Administration, Learning Stages I-IV, Staff Development, and Community. Each year those involved in each of these activities should assess the present year's operations and draw up specific budgets for the next year based on the programs and educational objectives they wish to accomplish. The budget for the following year should be specific and fairly exact. However, at the same time, tentative budgets for the following 4 years should be drawn up based on the specific requests for the following year.

These budgets should not speak simply of so many teachers at a particular salary but should be accompanied by brief descriptions of the programs involved. For example, a request for additional personnel should specify what subject area(s) they would be teaching. Accompanying the budget requests should be evaluation plans so that those requesting financial resources can be held responsible for producing a result. The specific requests for each activity should be arranged in educational priorities.

At this point the requests for all activities should be boxed together, presented, and discussed; the priorities should be worked out and the final budget drawn up by representatives of all the activities; and a five-year estimate should also be submitted. The final budget for the entire facility should include a brief program description and program objectives. The ceiling figure for the school budget should be based on an estimate of the next year's per-pupil operating costs for the D. C. School System as a whole. Each year, specific programs should be enlarged, reduced, or kept at the same level based on an evaluation of the program's performance as compared to its cost and the relative costs and effectiveness of the other programs competing for the educational dollar. These general guidelines are discussed in relation to the First Facility in the Operating Plan, Volume II, Section 3.

REFERENCES

1. Fisher, G. H. "Role of Cost-Utility Analysis," in Program Budgeting edited by David Novick. Cambridge: Harvard University Press, 1965. p. 68.

2. Financial Accounting for Local and State School Systems. Washington, D. C.: U. S. Department of Health, Education, and Welfare, Office of Education, 1968. p. 222.

APPENDIX A

COST MODEL

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10/ 3/69

                        INPUT DATA, ALTERNATIVE  MIN1   FORT LINCOLN MINIMUM CASE

L1AS       17800.000   L2AS       15000.000   L3AS       12700.000   L4AS        8800.000   L5AS        5860.000
L4HW           6.660   L5HW           6.660   SDW         8800.000   ACL1         300.000   ACL2         240.000
ACL3         240.000   ACL4         125.000   ACL5         125.000   L1TR           0.000   L2TR           0.000
L3TR           0.000   L4TR           0.000   L5TR           0.000   PITTC          0.100   SITTC          0.500
POTTC        100.000   POTTD          3.000   POTTDC        16.000   DERCF          0.100   CERCF          0.200
ACO          750.000   CDC           75.000   CTC           75.000   CTD            2.000   CTDC          16.000
OMPF           0.070   OMSF           0.070   ALCS         125.000   GL1            0.000   GL2            0.000
GL3            4.000   GL4A           0.000   GL4B           0.000   GL5            2.000   DUM1           0.000
GIFOEC      6000.000   GIDES4         0.000   GIFOSM         0.000   GIOSS4         0.000   GICP           0.000
GCI            0.000   GCID           0.000   GITC           0.000   GCONI          0.000   GIOMS          0.000
GO             2.000   GADES4      1500.000   GADSS4       400.000   GAPR        1750.000   GFR            0.000
GPAITF         0.500   GPAIT        900.000   GPAOTF         0.500   GPAOT          5.000   GCA            0.000
GCAD           0.000   GATC           0.000   GCONA      40000.000   S1S          175.000   S1L1           0.000
S1L2           0.000   S1L3           2.000   S1L4A          2.000   S1L4B          0.000   S1L5           4.000
DUM2           0.000   S1IFCC     23145.000   S1ICCS         0.000   S1IFOC       300.000   S1IOS4        50.000
S1IFCS         0.000   S1ICSS         0.000   S1IFOS         0.000   S1IOSS         0.000   S1ICP          0.000
S1CI           0.000   S1CID          0.000   S1ITC          0.000   S1CONI         0.000   S1IOMS         0.000
S1O            1.000   S1AFC       1250.000   S1ACS          0.000   S1AOS4        50.000   S1AFCS     17525.000
S1ACSS       100.000   S1AOSS       300.000   S1APR        750.000   S1FR           0.000   S1PITF         1.000
S1PAIT       100.000   S1SITF         0.350   S1SAIT        10.000   S1POTF         1.000   S1PAOT         1.000
S1CA          18.000   S1CAD          1.000   S1ATC          0.500   S1CONA      8500.000   S1SLF          1.000
S2S          235.000   S2L1           0.000   S2L2           0.000   S2L3           3.000   S2L4A          3.000
S2L4B          0.000   S2L5           4.000   S2IFCC     26255.000   S2ICCS         0.000   S2IFOC       300.000
S2IOS4        50.000   S2IFCS         0.000   S2ICSS         0.000   S2IFOS         0.000   S2IOSS         0.000
S2ICP          0.000   S2CI           0.000   S2CID          0.000   S2ITC          0.000   S2CONI         0.000
S2IOMS         0.000   S2O            1.000   S2AFC       1000.000   S2ACS          0.000   S2AOS4        50.000
S2AFCS     17965.000   S2ACSS       100.000   S2AOSS       300.000   S2APR        750.000   S2FR           0.000
S2PITF         1.000   S2PAIT       100.000   S2SITF         1.000   S2SAIT         3.000   S2POTF         1.000
S2PAOT         1.000   S2CA          18.000   S2CAD          1.000   S2ATC          0.500   S2CONA      5500.000
S2SLF          1.000   S34S         290.000   S34L1          0.000   S34L2          0.000   S34L3          4.000
S34L4A         4.000   S34L4B         0.000   S34L5          4.000   S34IEC     26160.000   S34ISC         0.000
S34IEO       300.000   S34ISO        50.000   S34IC          0.000   S34ICS         0.000   S34IO          0.000
S34IOS         0.000   S34ICP         0.000   S34CI          0.000   S34CID         0.000   S34ITC         0.000
S34CNI         0.000   S34IMS         0.000   S34O           1.000   S34AFC      1000.000   S34ACS         0.000
S34OS4        50.000   S34AC      18910.000   S34CSS       100.000   S34OSS       300.000   S34APR       750.000
S34FR          0.000   S34PIF         1.000   S34PIT       100.000   S34SIF         1.000   S34SIT         8.000
S34POF         1.000   S34POT         1.000   S34CA         18.000   S34CAD         1.000   S34ATC         0.500
S34CNA      6000.000   S34SLF         1.000   S5S            0.000   S5L1           0.000   S5L2           0.000
S5L3           0.000   S5L4A          0.000   S5L4B          0.000   S5L5           0.000   S5IFCC         0.000
S5ICCS         0.000   S5IFOC         0.000   S5IOS4         0.000   S5IFCS         0.000   S5ICSS         0.000
S5IFOS         0.000   S5IOSS         0.000   S5ICP          0.000   S5CI           0.000   S5CID          0.000
S5ITC          0.000   S5CONI         0.000   S5IOMS         0.000   S5O            0.000   S5AFC          0.000
S5ACS          0.000   S5AOS4         0.000   S5AFCS         0.000   S5ACSS         0.000   S5AOSS         0.000
S5APR          0.000   S5FR           0.000   S5PITF         0.000   S5PAIT         0.000   S5SITF         0.000
S5SAIT         0.000   S5POTF         0.000   S5PAOT         0.000   S5CA           0.000   S5CAD          0.000
S5ATC          0.000   S5CONA         0.000   S5SLF          0.000   S6S            0.000   S6L1           0.000
S6L2           0.000   S6L3           0.000   S6L4A          0.000   S6L4B          0.000   S6L5           0.000
S6IFCC         0.000   S6ICCS         0.000   S6IFOC         0.000   S6IOS4         0.000   S6IFCS         0.000
S6ICSS         0.000   S6IFOS         0.000   S6IOSS         0.000   S6ICP          0.000   S6CI           0.000
S6CID          0.000   S6ITC          0.000   S6CONI         0.000   S6IOMS         0.000   S6O            0.000
S6AFC          0.000   S6ACS          0.000   S6AOS4         0.000   S6AFCS         0.000   S6ACSS         0.000
S6AOSS         0.000   S6APR          0.000   S6FR           0.000   S6PITF         0.000   S6PAIT         0.000
S6SITF         0.000   S6SAIT         0.000   S6POTF         0.000   S6PAOT         0.000   S6CA           0.000
S6CAD          0.000   S6ATC          0.000   S6CONA         0.000   S6SLF          0.000   S7S            0.000
S7L1           0.000   S7L2           0.000   S7L3           0.000   S7L4A          0.000   S7L4B          0.000
S7L5           0.000   S7IFCC         0.000   S7ICCS         0.000   S7IFOC         0.000   S7IOS4         0.000
S7IFCS         0.000   S7ICSS         0.000   S7IFOS         0.000   S7IOSS         0.000   S7ICP          0.000
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S7CI           0.000  S7CID          0.000  S7ITC          0.000  S7CONI         0.000  S7IDMS         0.000
S7D            0.000  S7AFC          0.000  S7ACS          0.000  S7ADS4         0.000  S7AFCS         0.000
S7ACSS         0.000  DUM3           0.000  DUM4           0.000  DUM5           0.000  DUM6           0.000
S7ADSS         0.000  S7APR          0.000  S7FR           0.000  S7PITF         0.000  S7PAIT         0.000
S7SITF         0.000  S7SAIT         0.000  S7PDTF         0.000  S7PADT         0.000  S7CA           0.000
S7CAD          0.000  S7ATC          0.000  S7CONA         0.000  S7SLF          0.000  STL1           0.000
STL2           0.000  STL3           1.000  STL4A          0.000  STL4B          0.000  STL5           0.000
DUM8           0.000  STSA          35.000  STIC          20.000  STICW         10.000  STIWKS         8.000
STWL1T         0.000  STWL2T         0.000  STWL3T         0.000  STWL4T         0.000  STWL5T         0.000
STIWL1         0.000  STIWL2         0.000  STIWL3        11.000  STIHL4       320.000  STIWL5         8.000
STSAH         60.000  STWC           3.000  STIHWC        15.000  STIDCP         1.000  STSAHR         1.500
STIRHC         1.000  STIRCP        25.000  STIFL1         0.000  STIFL2         0.000  STIFL3         1.070
STIFL4         1.330  STIFL5         1.210  STIFCC         0.000  STICCT         0.000  STIFDC         0.000
STIDS4         0.000  STIFCS      2000.000  STICST         0.000  STIFDS      1500.000  STIDSS         0.000
STICP        350.000  STFRWK       250.000  STIITF         1.000  STIITT      5200.000  STIDTF         0.400
STIDTT         1.000  STITFT         0.000  STIIT          0.000  STITFS         0.000  STCI         100.000
STCID          6.000  STITC          0.000  STCONI     25800.000  DUM9           0.000  DUM10          0.000
STIDMS         0.000  STADL1         0.000  STADL2         0.000  STADL3         0.000  STADL4         0.000
STADL5         0.000  STAFL1         0.000  STAFL2         0.000  STAFL3         0.000  STAFL4         0.000
STAFL5         0.000  STD            0.000  STAFC          0.000  STACT          0.000  STADS4         0.000
STACST         0.000  STADST         0.000  STAPR          0.000  STFR           0.000  STAITF         0.000
STAITT         0.000  STADTF         0.000  STADTT         0.000  STCA           0.000  STCAD          0.000
STATC          0.000  STCONA      7000.000  STDCC          0.000  STDCL2         0.000  STDCL3         0.000
STDC4A         0.000  STDC4B         0.000  STDCL5         0.000  STDCCN         0.000  STDCDW         0.000
STDCCW         0.000  STDCFE         0.000  STDCE          0.000  STDCRW         0.000  STDCFD         0.000
STDCOW         0.000  CS             1.000  CL1            0.000  CL2            0.000  DUM11          0.000
CL3            3.000  CL4A           7.000  CL4B           0.000  CL5           16.000  DUM12          0.000
CIFCC          0.000  CICCS          0.000  CIFDC          0.000  CIDS4          0.000  CIFCS          0.000
CICSS          0.000  CIFDS          0.000  CIDSS          0.000  CICP           0.000  CCI            0.000
CCID           0.000  CITC           0.000  CCONI          0.000  CIDMS          0.000  CD             1.000
CAFC           0.000  CACS           0.000  CADS4       7500.000  CACSS       3250.000  CADSS4      3000.000
CAPR        5000.000  CFR            0.000  CPAITF         0.900  CPAIT       2880.000  CSAITF         0.000
CSAIT          0.000  CPADTF         1.000  CPADT          7.000  CCA           28.000  CCAD           5.000
CATC           1.000  CCONA      50000.000  CFOOD          0.000  NWIDY         52.000  S1SPD       4050.000
S2SPD       2700.000  S34SPD      2700.000  CSPD       18000.000  CFL3      -22040.000  CFL4      -43700.000
CFL5      -10900.000  CDECFC      1500.000  000000         0.000  000000         0.000  000000         0.000
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10/ 3/69
                 FORT LINCOLN SCHOOL COST MODEL--VERSION  2 UP-DATED 10/ 2/69
 FORT LINCOLN MINIMUM CASE
                                                                                  ALTERNATIVE MIN1
      COST CATEGORIES                                 DOLLARS IN
                                                             THOUSANDS

INVESTMENT
     GENERAL ADMINISTRATION
          PERSONNEL ACQUISITION

               LEVEL 1                                        0.00
               LEVEL 2                                        0.00
               LEVEL 3                                        0.00
               LEVEL 4                                        0.00
               LEVEL 5                                        0.00
                                                              -----       0.00
          OFFICE EQUIPMENT--CAPITALIZED
                                                              -----       6.00
          OFFICE SUPPLIES AND MATERIALS
                                                              -----       0.00
          COMMUNICATIONS AND PRINTING
                                                              -----       0.00
          CONSULTANTS AND CONTRACTS

               CONSULTANTS                                    0.00
               CONTRACTS                                      0.00
                                                              -----       0.00
          OPERATIONS AND MAINTENANCE SUPPLIES
                                                              -----       0.00
                                                                          -----      6.00
     STAGE 1 INSTRUCTION
          PERSONNEL ACQUISITION

               LEVEL 1                                        0.00
               LEVEL 2                                        0.00
               LEVEL 3                                        0.00
               LEVEL 4                                        0.00
               LEVEL 5                                        0.00
                                                              -----       0.00
          EQUIPMENT--CAPIT. AND NOT CAPITAL.

               CLASSROOM                                     23.15
               OFFICE                                         0.35
                                                              -----      23.50
          SUPPLIES AND MATERIALS

               CLASSROOM                                      0.00
               OFFICE                                         0.00
                                                              -----       0.00
          COMMUNICATIONS AND PRINTING
                                                              -----       0.00
          CONSULTANTS AND CONTRACTS

               CONSULTANTS                                    0.00
               CONTRACTS                                      0.00
                                                              -----       0.00
          OPERATIONS AND MAINTENANCE SUPPLIES
                                                              -----       0.00
```

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                                                                           -----          23.50
STAGE 2 INSTRUCTION
        PERSONNEL ACQUISITION

                LEVEL 1                                           0.00
                LEVEL 2                                           0.00
                LEVEL 3                                           0.00
                LEVEL 4                                           0.00
                LEVEL 5                                           0.00
                                                                 -----           0.00
        EQUIPMENT--CAPIT. AND NOT CAPITAL.

                CLASSROOM                                        26.26
                OFFICE                                            0.35
                                                                 -----          26.61
        SUPPLIES AND MATERIALS

                CLASSROOM                                         0.00
                OFFICE                                            0.00
                                                                 -----           0.00
        COMMUNICATIONS AND PRINTING
                                                                 -----           0.00
        CONSULTANTS AND CONTRACTS

                CONSULTANTS                                       0.00
                CONTRACTS                                         0.00
                                                                 -----           0.00
        OPERATIONS AND MAINTENANCE SUPPLIES
                                                                 -----           0.00
                                                                                -----          26.61
STAGE 3-4 INSTRUCTION
        PERSONNEL ACQUISITION

                LEVEL 1                                           0.00
                LEVEL 2                                           0.00
                LEVEL 3                                           0.00
                LEVEL 4                                           0.00
                LEVEL 5                                           0.00
                                                                 -----           0.00
        EQUIPMENT--CAPIT. AND NOT CAPITAL.

                CLASSROOM                                        26.16
                OFFICE                                            0.35
                                                                 -----          26.51
        SUPPLIES AND MATERIALS

                CLASSROOM                                         0.00
                OFFICE                                            0.00
                                                                 -----           0.00
        COMMUNICATIONS AND PRINTING
                                                                 -----           0.00
        CONSULTANTS AND CONTRACTS

                CONSULTANTS                                       0.00
                CONTRACTS                                         0.00
                                                                 -----           0.00
        OPERATIONS AND MAINTENANCE SUPPLIES
                                                                 -----           0.00
                                                                                -----          26.51
STAGE 5 INSTRUCTION
        PERSONNEL ACQUISITION
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```
              LEVEL 1                                    0.00
              LEVEL 2                                    0.00
              LEVEL 3                                    0.00
              LEVEL 4                                    0.00
              LEVEL 5                                    0.00
                                                         -----
         EQUIPMENT--CAPIT. AND NOT CAPITAL.                        0.00

              CLASSROOM                                  0.00
              OFFICE                                     0.00
                                                         -----
         SUPPLIES AND MATERIALS                                    0.00

              CLASSROOM                                  0.00
              OFFICE                                     0.00
                                                         -----
         COMMUNICATIONS AND PRINTING                               0.00
                                                         -----
         CONSULTANTS AND CONTRACTS                                 0.00

              CONSULTANTS                                0.00
              CONTRACTS                                  0.00
                                                         -----
         OPERATIONS AND MAINTENANCE SUPPLIES                       0.00
                                                         -----
                                                                   0.00
                                                                   -----
    STAGE 6 INSTRUCTION                                                      0.00
         PERSONNEL ACQUISITION

              LEVEL 1                                    0.00
              LEVEL 2                                    0.00
              LEVEL 3                                    0.00
              LEVEL 4                                    0.00
              LEVEL 5                                    0.00
                                                         -----
         EQUIPMENT--CAPIT. AND NOT CAPITAL.                        0.00

              CLASSROOM                                  0.00
              OFFICE                                     0.00
                                                         -----
         SUPPLIES AND MATERIALS                                    0.00

              CLASSROOM                                  0.00
              OFFICE                                     0.00
                                                         -----
         COMMUNICATIONS AND PRINTING                               0.00
                                                         -----
         CONSULTANTS AND CONTRACTS                                 0.00

              CONSULTANTS                                0.00
              CONTRACTS                                  0.00
                                                         -----
         OPERATIONS AND MAINTENANCE SUPPLIES                       0.00
                                                         -----
                                                                   0.00
                                                                   -----
    STAGE 7 INSTRUCTION                                                      0.00
         PERSONNEL ACQUISITION

              LEVEL 1                                    0.00
              LEVEL 2                                    0.00
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        LEVEL 3                                        0.00
        LEVEL 4                                        0.00
        LEVEL 5                                        0.00
                                                       -----      0.00
    EQUIPMENT--CAPIT. AND NOT CAPITAL.

        CLASSROOM                                      0.00
        OFFICE                                         0.00
                                                       -----      0.00
    SUPPLIES AND MATERIALS

        CLASSROOM                                      0.00
        OFFICE                                         0.00
                                                       -----      0.00
    COMMUNICATIONS AND PRINTING
                                                       -----      0.00
    CONSULTANTS AND CONTRACTS

        CONSULTANTS                                    0.00
        CONTRACTS                                      0.00
                                                       -----      0.00
    OPERATIONS AND MAINTENANCE SUPPLIES
                                                       -----      0.00
                                                                  -----      0.00
STAFF DEVELOPMENT
    PERSONNEL

        LEVEL 1                                        0.00
        LEVEL 2                                        0.00
        LEVEL 3                                       37.61
        LEVEL 4                                       25.57
        LEVEL 5                                       15.33
        STUDENT AIDES                                  3.15
        CHILDREN AND COMMUNITY PEOPLE                  1.15
                                                       -----     82.81
    EQUIPMENT--CAPITALIZED

        CLASSROOM                                      0.00
        OFFICE                                         0.00
                                                       -----      0.00
    SUPPLIES AND MATERIALS

        CLASSROOM                                      2.00
        OFFICE                                         1.50
                                                       -----      3.50
    COMMUNICATIONS AND PRINTING
                                                       -----      0.35
    FACILITY RENTAL
                                                       -----      2.00
    TRAVEL

        IN TOWN, PROFESSIONALS                         0.52
        OUT OF TOWN, PROFESSIONALS                     2.66
                                                       -----      3.18
    CONSULTANTS AND CONTRACTS

        CONSULTANTS                                   45.00
        CONTRACTS                                     25.80
                                                       -----     70.80
    OPERATIONS AND MAINTENANCE SUPPLIES
                                                       -----      0.00
```

```
                DAY CARE-STAFF TRAINING PARTICIPANTS

                        PERSONNEL                                         0.00
                        EQUIPMENT AND MATERIALS                           0.00
                        FACILITY RENTAL                                   0.00
                        OTHER                                             0.00
                                                                         -----          0.00
        COMMUNITY ACTIVITIES                                                           -----        162.65
                PERSONNEL ACQUISITION

                        LEVEL 1                                           0.00
                        LEVEL 2                                           0.00
                        LEVEL 3                                           0.00
                        LEVEL 4                                           0.00
                        LEVEL 5                                           0.00
                                                                         -----          0.00
                EQUIPMENT--CAPITALIZED

                        CLASSROOM                                         0.00
                        OFFICE                                            0.00
                                                                         -----          0.00
                SUPPLIES AND MATERIALS

                        CLASSROOM                                         0.00
                        OFFICE                                            0.00
                                                                         -----          0.00
                COMMUNICATIONS AND PRINTING
                                                                         -----          0.00
                CONSULTANTS AND CONTRACTS

                        CONSULTANTS                                       0.00
                        CONTRACTS                                         0.00
                                                                         -----          0.00
                OPERATIONS AND MAINTENANCE SUPPLIES
                                                                         -----          0.00
                                                                               -----          0.00
TOTAL INVESTMENT                                                                            -----        245.26
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10/ 3/69  COST CATEGORIES                                        DOLLARS IN
                                                                       THOUSANDS

ANNUAL OPERATING
     GENERAL ADMINISTRATION
          PERSONNEL

               LEVEL 1                                             0.00
               LEVEL 2                                             0.00
               LEVEL 3                                            50.80
               LEVEL 4                                             0.00
               LEVEL 5                                            11.72
               ANNUAL PERSONNEL ACQUISITION                        0.00
                                                                  -----      62.52
          OFFICE EQUIPMENT

               CAPITALIZED                                         0.60
               NOT CAPITALIZED                                     3.00
                                                                  -----       3.60
          OFFICE SUPPLIES AND MATERIALS
                                                                  -----       0.80
          COMMUNICATIONS, PRINTING, FACILITIES

               COMMUNICATIONS                                      1.50
               PRINTING AND REPRODUCTION                           1.75
               FACILITY RENTAL                                     0.00
                                                                  -----       3.25
          TRAVEL

               IN TOWN, PROFESSIONALS                              0.18
               OUT OF TOWN, PROFESSIONALS                          1.48
                                                                  -----       1.66
          CONSULTANTS AND CONTRACTS

               CONSULTANTS                                         0.00
               CONTRACTS                                          40.00
                                                                  -----      40.00
          OPERATIONS AND MAINTENANCE

               PERSONNEL                                           7.83
               SUPPLIES AND MATERIALS                              7.83
                                                                  -----      15.66
                                                                             -----     127.49
     STAGE 1 INSTRUCTION
          PERSONNEL

               LEVEL 1                                             0.00
               LEVEL 2                                             0.00
               LEVEL 3                                            25.40
               LEVEL 4                                            17.60
               LEVEL 5                                            23.44
               ANNUAL PERSONNEL ACQUISITION                        0.00
               STIPENDS (STUDENTS)                                 4.05
                                                                  -----      70.49
          EQUIPMENT -- CAPITALIZED

               CLASSROOM                                           4.63
               OFFICE                                              0.04
                                                                  -----       4.66
          EQUIPMENT--NOT CAPITALIZED
```

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              CLASSROOM                                   1.25
              OFFICE                                      0.05
                                                         -----        1.30
          SUPPLIES AND MATERIALS

              CLASSROOM                                  35.03
              OFFICE                                      0.30
                                                         -----       35.33
          COMMUNICATIONS, PRINTING, FACILITIES

              COMMUNICATIONS                              0.75
              PRINTING AND REPRODUCTION                   0.75
              FACILITY RENTAL                             0.00
                                                         -----        1.50
          TRAVEL

              IN TOWN, PROFESSIONALS                      0.04
              IN TOWN, STUDENTS                           0.31
              OUT OF TOWN, PROFESSIONALS                  0.59
                                                         -----        0.94
          CONSULTANTS AND CONTRACTS

              CONSULTANTS                                 2.31
              CONTRACTS                                   8.50
                                                         -----       10.81
          OPERATIONS AND MAINTENANCE

              PERSONNEL                                   8.47
              SUPPLIES AND MATERIALS                      8.47
                                                         -----       16.94
          LUNCH PROGRAM
                                                         -----       21.88
                                                                     -----      163.85
     STAGE 2 INSTRUCTION
          PERSONNEL

              LEVEL 1                                     0.00
              LEVEL 2                                     0.00
              LEVEL 3                                    38.10
              LEVEL 4                                    26.40
              LEVEL 5                                    23.44
              ANNUAL PERSONNEL ACQUISITION                0.00
              STIPENDS (STUDENTS)                         2.70
                                                         -----       90.64
          EQUIPMENT--CAPITALIZED

              CLASSROOM                                   5.25
              OFFICE                                      0.04
                                                         -----        5.29
          EQUIPMENT--NOT CAPITALIZED

              CLASSROOM                                   1.00
              OFFICE                                      0.05
                                                         -----        1.05
          SUPPLIES AND MATERIALS

              CLASSROOM                                  41.47
              OFFICE                                      0.30
                                                         -----       41.77
          COMMUNICATIONS, PRINTING, FACILITIES
```

```
            COMMUNICATIONS                                   0.75
            PRINTING AND REPRODUCTION                        0.75
            FACILITY RENTAL                                  0.00
                                                            -----       1.50
        TRAVEL

            IN TOWN, PROFESSIONALS                           0.06
            IN TOWN, STUDENTS                                0.35
            OUT OF TOWN, PROFESSIONALS                       0.89
                                                            -----       1.30
        CONSULTANTS AND CONTRACTS

            CONSULTANTS                                      2.31
            CONTRACTS                                        5.50
                                                            -----       7.81
        OPERATIONS AND MAINTENANCE

            PERSONNEL                                       10.27
            SUPPLIES AND MATERIALS                          10.27
                                                            -----      20.53
        LUNCH PROGRAM
                                                            -----      29.38
                                                                       -----      199.26
    STAGE 3-4 INSTRUCTION
        PERSONNEL

            LEVEL 1                                          0.00
            LEVEL 2                                          0.00
            LEVEL 3                                         50.80
            LEVEL 4                                         35.20
            LEVEL 5                                         23.44
            ANNUAL PERSONNEL ACQUISITION                     0.00
            STIPENDS (STUDENTS)                              2.70
                                                            -----     112.14
        EQUIPMENT--CAPITALIZED

            CLASSROOM                                        5.23
            OFFICE                                           0.04
                                                            -----       5.27
        EQUIPMENT--NOT CAPITALIZED

            CLASSROOM                                        1.00
            OFFICE                                           0.05
                                                            -----       1.05
        SUPPLIES AND MATERIALS

            CLASSROOM                                       47.91
            OFFICE                                           0.30
                                                            -----      48.21
        COMMUNICATIONS, PRINTING, FACILITIES

            COMMUNICATIONS                                   0.75
            PRINTING AND REPRODUCTION                        0.75
            FACILITY RENTAL                                  0.00
                                                            -----       1.50
        TRAVEL

            IN TOWN, PROFESSIONALS                           0.08
            IN TOWN, STUDENTS                                1.16
            OUT OF TOWN, PROFESSIONALS                       1.18
        CONSULTANTS AND CONTRACTS                                        -----          2.42

                CONSULTANTS                                               2.31
                CONTRACTS                                                 6.00
        OPERATIONS AND MAINTENANCE                                       -----          8.31

                PERSONNEL                                                12.33
                SUPPLIES AND MATERIALS                                   12.33
        LUNCH PROGRAM                                                    -----         24.67

                                                                         -----         36.25
STAGE 5 INSTRUCTION                                                                    -----        239.82
        PERSONNEL

                LEVEL 1                                                   0.00
                LEVEL 2                                                   0.00
                LEVEL 3                                                   0.00
                LEVEL 4                                                   0.00
                LEVEL 5                                                   0.00
                ANNUAL PERSONNEL ACQUISITION                              0.00
        EQUIPMENT--CAPITALIZED                                           -----          0.00

                CLASSROOM                                                 0.00
                OFFICE                                                    0.00
        EQUIPMENT--NOT CAPITALIZED                                       -----          0.00

                CLASSROOM                                                 0.00
                OFFICE                                                    0.00
        SUPPLIES AND MATERIALS                                           -----          0.00

                CLASSROOM                                                 0.00
                OFFICE                                                    0.00
        COMMUNICATIONS, PRINTING, FACILITIES                             -----          0.00

                COMMUNICATIONS                                            0.00
                PRINTING AND REPRODUCTION                                 0.00
                FACILITY RENTAL                                           0.00
        TRAVEL                                                           -----          0.00

                IN TOWN, PROFESSIONALS                                    0.00
                IN TOWN, STUDENTS                                         0.00
                OUT OF TOWN, PROFESSIONALS                                0.00
        CONSULTANTS AND CONTRACTS                                        -----          0.00

                CONSULTANTS                                               0.00
                CONTRACTS                                                 0.00
        OPERATIONS AND MAINTENANCE                                       -----          0.00

                PERSONNEL                                                 0.00
                SUPPLIES AND MATERIALS                                    0.00
                                                                         -----          0.00
        LUNCH PROGRAM
                                                            -----       0.00
   STAGE 6 INSTRUCTION                                                  -----       0.00
        PERSONNEL

             LEVEL 1                                        0.00
             LEVEL 2                                        0.00
             LEVEL 3                                        0.00
             LEVEL 4                                        0.00
             LEVEL 5                                        0.00
             ANNUAL PERSONNEL ACQUISITION                   0.00
                                                            -----       0.00
        EQUIPMENT--CAPITALIZED

             CLASSROOM                                      0.00
             OFFICE                                         0.00
                                                            -----       0.00
        EQUIPMENT--NOT CAPITALIZED

             CLASSROOM                                      0.00
             OFFICE                                         0.00
                                                            -----       0.00
        SUPPLIES AND MATERIALS

             CLASSROOM                                      0.00
             OFFICE                                         0.00
                                                            -----       0.00
        COMMUNICATIONS, PRINTING, FACILITIES

             COMMUNICATIONS                                 0.00
             PRINTING AND REPRODUCTION                      0.00
             FACILITY RENTAL                                0.00
                                                            -----       0.00
        TRAVEL

             IN TOWN, PROFESSIONALS                         0.00
             IN TOWN, STUDENTS                              0.00
             OUT OF TOWN, PROFESSIONALS                     0.00
                                                            -----       0.00
        CONSULTANTS AND CONTRACTS

             CONSULTANTS                                    0.00
             CONTRACTS                                      0.00
                                                            -----       0.00
        OPERATIONS AND MAINTENANCE

             PERSONNEL                                      0.00
             SUPPLIES AND MATERIALS                         0.00
                                                            -----       0.00
        LUNCH PROGRAM
                                                            -----       0.00
   STAGE 7 INSTRUCTION                                                  -----       0.00
        PERSONNEL

             LEVEL 1                                        0.00
             LEVEL 2                                        0.00
             LEVEL 3                                        0.00
             LEVEL 4                                        0.00
             LEVEL 5                                        0.00
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          ANNUAL PERSONNEL ACQUISITION                      0.00
                                                           -----       0.00
       EQUIPMENT--CAPITALIZED

          CLASSROOM                                         0.00
          OFFICE                                            0.00
                                                           -----       0.00
       EQUIPMENT--NOT CAPITALIZED

          CLASSROOM                                         0.00
          OFFICE                                            0.00
                                                           -----       0.00
       SUPPLIES AND MATERIALS

          CLASSROOM                                         0.00
          OFFICE                                            0.00
                                                           -----       0.00
       COMMUNICATIONS, PRINTING, FACILITIES

          COMMUNICATIONS                                    0.00
          PRINTING AND REPRODUCTION                         0.00
          FACILITY RENTAL                                   0.00
                                                           -----       0.00
       TRAVEL

          IN TOWN, PROFESSIONALS                            0.00
          IN TOWN, STUDENTS                                 0.00
          OUT OF TOWN, PROFESSIONALS                        0.00
                                                           -----       0.00
       CONSULTANTS AND CONTRACTS

          CONSULTANTS                                       0.00
          CONTRACTS                                         0.00
                                                           -----       0.00
       OPERATIONS AND MAINTENANCE

          PERSONNEL                                         0.00
          SUPPLIES AND MATERIALS                            0.00
                                                           -----       0.00
       LUNCH PROGRAM

                                                           -----       0.00
                                                                      -----       0.00
    STAFF DEVELOPMENT
       PERSONNEL

          LEVEL 1                                           0.00
          LEVEL 2                                           0.00
          LEVEL 3                                          12.70
          LEVEL 4                                           0.00
          LEVEL 5                                           0.00
          SUBSTITUTES                                       8.80
          ANNUAL PERSONNEL ACQUISITION                      0.00
          PRE-SERVICE TRAINING--NEW PERSONNEL               0.00
                                                           -----      21.50
       EQUIPMENT--CAPITALIZED

          CLASSROOM                                         0.00
          OFFICE                                            0.00
                                                           -----       0.00
       EQUIPMENT--NOT CAPITALIZED
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              CLASSROOM                                        0.00
              OFFICE                                           0.00
                                                               -----        0.00
         SUPPLIES AND MATERIALS

              CLASSROOM                                        0.00
              OFFICE                                           0.00
                                                               -----        0.00
         COMMUNICATIONS, PRINTING, FACILITIES

              COMMUNICATIONS                                   0.00
              PRINTING AND REPRODUCTION                        0.00
              FACILITY RENTAL                                  0.00
                                                               -----        0.00
         TRAVEL

              IN TOWN, PROFESSIONALS                           0.00
              OUT OF TOWN, PROFESSIONALS                       0.00
                                                               -----        0.00
         CONSULTANTS AND CONTRACTS

              CONSULTANTS                                      0.00
              CONTRACTS                                        7.00
                                                               -----        7.00
         OPERATIONS AND MAINTENANCE

              PERSONNEL                                        2.00
              SUPPLIES AND MATERIALS                           2.00
                                                               -----        3.99
                                                                            -----        32.49
    COMMUNITY ACTIVITIES
         PERSONNEL

              LEVEL 1                                          0.00
              LEVEL 2                                          0.00
              LEVEL 3                                         16.06
              LEVEL 4                                         17.90
              LEVEL 5                                         82.86
              ANNUAL PERSONNEL ACQUISITION                     0.00
              STIPENDS (STUDENTS)                             18.00
                                                               -----      134.82
         EQUIPMENT--CAPITALIZED

              CLASSROOM                                        0.00
              OFFICE                                           1.50
                                                               -----        1.50
         EQUIPMENT--NOT CAPITALIZED

              CLASSROOM                                        0.00
              OFFICE                                           7.50
                                                               -----        7.50
         SUPPLIES AND MATERIALS

              CLASSROOM                                        3.25
              OFFICE                                           3.00
                                                               -----        6.25
         COMMUNICATIONS, PRINTING, FACILITIES

              COMMUNICATIONS                                   0.75
              PRINTING AND REPRODUCTION                        5.00
              FACILITY RENTAL                                  0.00
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                                                                 -----         5.75
          TRAVEL

                 IN TOWN, PROFESSIONALS                           2.59
                 IN TOWN, STUDENTS                                0.00
                 OUT OF TOWN, PROFESSIONALS                      10.36
                                                                 -----        12.95
          CONSULTANTS AND CONTRACTS

                 CONSULTANTS                                     13.50
                 CONTRACTS                                       50.00
                                                                 -----        63.50
          OPERATIONS AND MAINTENANCE

                 PERSONNEL                                       15.00
                 SUPPLIES AND MATERIALS                          15.00
                                                                 -----        30.00
          FOOD
                                                                 -----         0.00
                                                                              -----       262.27
TOTAL ANNUAL OPERATING                                                                    -----      1025.17

TOTAL RESEARCH AND DEVELOPMENT,
INITIAL INVESTMENT, ANNUAL OPERATING                                                      -----      1270.43
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10/ 3/69

                                                        SENSITIVITY PARAMETERS
YEARS OF OPERATION                                                                 1

                                                        SELECTED DATA VALUES
INVESTMENT                                             245.26
   PERSONNEL ACQUISITION                                 0.00
   PERSONNEL (STAFF TRAINING)                           82.81
   CLASSROOM EQUIPMENT--CAPITALIZED                     75.56
   OFFICE EQUIPMENT--CAPITALIZED                         7.05
   CLASSROOM SUPPLIES + MATERIALS                        2.00
   OFFICE SUPPLIES + MATERIALS                           1.50
   COMMUNICATIONS + PRINTING                             0.35
   FACILITY RENTAL (STAFF TRAINING)                      2.00
   IN-TOWN TRAVEL, PROFESSIONALS                         0.52
   OUT-OF-TOWN TRAVEL,PROFESSIONALS                      2.66
   CONSULTANTS                                          45.00
   CONTRACTS                                            25.80
   OPERATIONS + MAINTENANCE SUPPLIES                     0.00

ANNUAL OPERATING                                      1025.17
   PERSONNEL(LESS PERS.ACQUISITION)                    492.11
   PERSONNEL ACQUISITION                                 0.00
   STIPENDS (STUDENTS)
   CLASSROOM EQUIPMENT--CAPITALIZED                     15.11
   OFFICE EQUIPMENT--CAPITALIZED                         2.21
   CLASSROOM EQUIPMENT-NOT CAPITAL.                      3.25
   OFFICE EQUIPMENT--NOT CAPITALIZED                    10.65
   CLASSROOM SUPPLIES + MATERIALS                      127.65
   OFFICE SUPPLIES + MATERIALS                           4.70
   COMMUNICATIONS + PRINTING                            13.50
   FACILITY RENTAL                                       0.00
   IN-TOWN TRAVEL, PROFESSIONALS                         2.95
   IN-TOWN TRAVEL, STUDENTS                              1.82
   OUT-OF-TOWN TRAVEL, PROFESSIONALS                    14.50
   CONSULTANTS                                          20.44
   CONTRACTS                                           117.00
   OPERATIONS + MAINTENANCE                            111.78
   LUNCH PROGRAM                                        87.50
   FOOD (COMMUNITY ACTIVITIES)                           0.00

TOTAL NUMBER OF STUDENTS                               700.00
   STAGE 1                                             175.00
   STAGE 2                                             235.00
   STAGE 3-4                                           290.00
   STAGE 5                                               0.00
   STAGE 6                                               0.00
   STAGE 7                                               0.00


TOTAL NUMBER OF STAFF(LESS DAY CARE)                    63.00
   BY LEVEL
        LEVEL 1                                          0.00
        LEVEL 2                                          0.00
        LEVEL 3                                         17.00
        LEVEL 4                                         16.00
        LEVEL 5                                         30.00
   BY ACTIVITY
        GENERAL ADMINISTRATION                           6.00
        STAGE 1                                          8.00
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          STAGE 2                                   10.00
          STAGE 3-4                                 12.00
          STAGE 5                                    0.00
          STAGE 6                                    0.00
          STAGE 7                                    0.00
          STAFF TRAINING                             1.00
          COMMUNITY ACTIVITIES                      26.00

 TOTAL NO. OF PROFESS.(LESS DAY CARE)               33.00
    GENERAL ADMINISTRATION                           4.00
    STAGE 1                                          4.00
    STAGE 2                                          6.00
    STAGE 3-4                                        8.00
    STAGE 5                                          0.00
    STAGE 6                                          0.00
    STAGE 7                                          0.00
    STAFF TRAINING                                   1.00
    COMMUNITY ACTIVITIES                            10.00

 STAFF RECEIVING ANNUAL STAFF TRAIN.                 0.00
    LEVEL 1                                          0.00
    LEVEL 2                                          0.00
    LEVEL 3                                          0.00
    LEVEL 4                                          0.00
    LEVEL 5                                          0.00

 STUDENT-TOTAL STAFF(-COM)-ST)RATIO                 19.44

 STUDENT TO STAFF RATIOS BY STAGES
    AVERAGE FOR ALL STAGES                          23.33
    STAGE 1                                         21.88
    STAGE 2                                         23.50
    STAGE 3-4                                       24.17
    STAGE 5                                          0.00
    STAGE 6                                          0.00
    STAGE 7                                          0.00

 STUDENT-TOTAL PROF.(-COM)-ST)RATIO                 31.82

 STUDENT-PROF.STAFF RATIOS BY STAGE
    AVERAGE FOR ALL STAGES                          38.89
    STAGE 1                                         43.75
    STAGE 2                                         39.17
    STAGE 3-4                                       36.25
    STAGE 5                                          0.00
    STAGE 6                                          0.00
    STAGE 7                                          0.00

 TOTAL INVEST.(LESS COMM)/STUDENT                  350.00

 INVESTMENT COST BY STAGE PER STUDENT
    AVERAGE FOR ALL STAGES                         109.00
    STAGE 1                                        134.00
    STAGE 2                                        113.00
    STAGE 3-4                                       91.00
    STAGE 5                                          0.00
    STAGE 6                                          0.00
    STAGE 7                                          0.00

 CLASS.EQP.+SUPP.INVEST.BY STAGE/STUD
    AVERAGE FOR ALL STAGES                         107.00
    STAGE 1                                        132.00
    STAGE 2                                        111.00
    STAGE 3-4                                       90.00
    STAGE 5                                          0.00
    STAGE 6                                          0.00
    STAGE 7                                          0.00

STF TRN. INVEST. PER STAFF PER.TRNED              3782.50

TOT.OPERATING COST(-LUNCH;-COMM)                   675.41

TOT.OP.COST(-LUNCH;-COMM)/STUDENT                  964.87

OP, COST(-LUNCH)BY STAGE/STUDENT
    AVERAGE FOR ALL STAGES                         736.33
    STAGE 1                                        811.27
    STAGE 2                                        722.92
    STAGE 3-4                                      701.97
    STAGE 5                                          0.00
    STAGE 6                                          0.00
    STAGE 7                                          0.00

ANN.CLASS.EQUIP.+SUPPL./STUDENT
    AVERAGE FOR ALL STAGES                         203.95
    STAGE 1                                        233.74
    STAGE 2                                        203.05
    STAGE 3-4                                      186.70
    STAGE 5
    STAGE 6
    STAGE 7

AN.STF.TRNING COST/STF.PER.TRNED.
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CONTRIBUTORS TO THE IMPLEMENTATION PLAN

Theresa Ware, Chief Consultant
James Green, Senior Consultant

7. IMPLEMENTATION PLAN

7.1 Introduction

This plan defines the tasks to be performed and the schedule to be maintained to bring the FLNT First Facility to an operating status by September 1970. It consists of 1) a visual task/event network, and 2) an implementing activities description report.

The visual task/event network is used to identify and display:

- The sequence in which the tasks must be performed.
- The events which occur when a defined task is completed.
- The interdependency of events.
- The responsibility for completion of tasks.
- The scheduled dates for completion of tasks.

Physically, the network is displayed in two dimensions with time measured in intervals of weeks represented on the horizontal axis and levels of responsibility represented on the vertical axis. The levels of responsibility identified for the network are:

LEVEL CODE	LEVEL DESCRIPTION
0	Federal Government (Congress, National Capital Planning Commission)
1	D. C. Government (Redevelopment Land Agency, Buildings and Grounds, Civil Service Commission)
2	D. C. Schools (Finance Office, Supply Office, Personnel, Building and Grounds)
3	Interim Education Committee (IEC)

LEVEL CODE	LEVEL DESCRIPTION
4	Special Projects Division of D. C. Schools and/or its Implementing Agent
5	FLNT Administration
6	GLC Education Plan
7	GLC Organization/Staffing Plan
8	GLC Operations Plan
9	GLC Community Participation Plan
10	GLC Funding Plan
11	GLC Facilities Plan

An event is displayed on the chart by a rectangle with an appropriate title to identify what must occur. The vertical position of the rectangle identifies who is responsible for the occurrence of the event. Each event will be uniquely numbered and assigned a responsibility level code. A line drawn between two events identifies a task that must be performed. The task may begin after the occurrence of the beginning event. An ending event occurs when all tasks identified with that event have been completed.

The implementing activities description report is a verbal description of the required task to be completed to accomplish each event of the network. The description includes statements of activities to be performed and identifies who is responsible for the activity and when the activity is scheduled for completion. Each task will be cross-referenced to the visual network display by respective beginning and ending event numbers.

The scheduled dates assigned to the network have been established based on the opening of the FLNT First Facility in September 1970 according to the original specifications for the school. Monthly review meetings of an implementing team, represented by GLC, SPD, and IED, have been incorporated into the network to review and monitor the progress of the implementing activities against the network plan. The network should be updated by the implementing team to reflect any changes in schedule or activities that occur during the implementation phase.

7.2 Implementation Activities Description Report

Activity/ Responsibility	Activity Descriptions	Week Beginning
	The National Capital Planning Commission approved the transfer of Jurisdiction of the land on which the First Facility will be built and forwarded the "Plat" to the Redevelopment Land Agency.	Sept 29, 1969

RLA will transfer the land to the D. C. Government Buildings and Grounds Department which is responsible for the construction of the First Facility.

Buildings and Grounds will then submit bids for the contract.

Bids will be accepted.

Contracts will be awarded by Buildings and Grounds.

Construction will begin under the direction of Buildings and Grounds.

It is recommended that a monitoring process be established in a cycle from the contractor to the District Government Buildings and Grounds to the Special Projects Division at 30% completion, 75% completion, and 100% completion. At each completion interval, Special Projects reviews the progress status with the I. E. C.

No responsible dates can be assigned to the construction activities at this time and no activity/responsibility code number can be assigned to the network event at this time.

The D. C. Schools Budget Office issued a "budget call" to all schools in the early Spring of 1968 which marked the beginning of preparations for the FY '70 Budget. Each school prepared a budget request and submitted it to the D. C. Schools Budget Office in late Spring or early Summer of 1968. The D. C. Schools Budget Office submitted all school budgets to the D. C. Government in October 1968. The D. C. Government submitted the school budgets along with

Activity/ Responsibility	Activity Descriptions	Week Beginning
	all other D. C. budgets to Congress in January 1969. Congress approved the D. C. Government Budget for FY '70 in the Spring of 1969.	
	The budget cycle dates for FY '70 were too early for inclusion of the Equipment and Furnishings for the First Facility, which will open September 1970. The Equipment and Furnishings specified in the Educational Plan designed by GLC during the summer of 1969 will be purchased from funds in the FY '70 budget. Since the FY '70 budget cycle has passed, a supplemental budget for the start-up capital outlay budget of the First Facility was submitted.	
001-4	Special Projects, with the technical assistance of GLC, submitted a Supplemental Budget for FY '70 to the D. C. Schools Budget Office. Submittal at this date means that the Supplemental Budget will go into the budget cycle with the FY '71 Budget.	Sept 29
	The FY '71 Budget cycle began in the Spring of 1969 and will be submitted to the D. C. Government in October 1969.	
002-2	The D. C. Schools Budget Office receives the Supplemental Budget Reques and prepares to submit it along with the FY '71 Budget.	
003-6	General Learning Corporation (GLC) completes the system design phase of its activities and submits the System Design Report for the First Facility on October 7, 1969 to the Special Projects Division of the D. C. Schools.	Oct 6
004-4	Special Projects Division reviews the System Design Report, submits a copy to the Board of Education, and makes plans to review it with FLNT Council	Oct 13

Activity/ Responsibility	Activity Descriptions	Week Beginning
	representatives, many of whom were participants in the Workshops conducted by Special Projects during the summer of 1969 (see Community Participation Plan, Volume II, Section 4.)	
005-4	Special Projects Division will conduct a meeting to which 60 or so FLNT community organizations will be invited to attend for the purpose of forming the Interim Education Committee. This shared-power Interim Education Committee will be selected by the 60 organizations originally invited to participate in the Community Participation Planning Workshop and any other additional groups missing from the list. This group broadly represents the existing FLNT community. It is expected that some 20 or 25 persons will be elected by the larger group to comprise the I. E. C. The I. E. C., which will be responsible and accountable to the Special Projects Division of the Board of Education, will then be established and operate until December 1970 when the permanent governing board or council is selected through an area-wide election process. (See Community Participation Plan, Volume II, Section 4.)	
006-4	It will be necessary for the Board of Education to approve the I. E. C. This will take approximately three months, but the I. E. C. will be a fully functional body assuming all of its responsibilities before approval takes place. Special Projects submits the approval request to the Board of Education.	
007-2	The Board of Education reviews the I. E. C. approval request and approval will take place around the middle of January 1970.	Oct 20

Activity/ Responsibility	Activity Descriptions	Week Beginning
008-2	The D. C. Schools Budget Office submits the Supplemental Budget for FY '70 for the First Facility and the FY '71 Regular Budget to the D. C. Government for approval.	
009-1	The D. C. Government receives the two Budget requests and prepares to submit them along with the other District budgets to Congress in January 1970.	
010-6	GLC completes position classifications for the First Facility staff based on the design of the Education Plan, Volume I, Section 1.	Oct 20
011-4	GLC submits position classifications for the First Facility staff to the Special Projects Division. The First Facility staff will be quite unique in terms of role descriptions and system practices affecting the staff. (See role descriptions for FLNT School Personnel, Volume II, Section 2.) Before recruitment of staff can begin, position classifications prepared by GLC and salaries for these position classifications must be approved by the D. C. Board of Education and the Civil Service Commission.	
012-4	Special Projects submits the position classifications to the Board of Education and the Civil Service Commission for approval. It is essential that the approval process be expedited, particularly in the case of the position for a Training Director and the position for an Office Manager so that the people filling these two positions will be interviewed, hired, and ready to start during the Phase I Staff Development by March 2, 1970. (See Staff Development, Volume II, Section 2.)	Oct 27

Activity/ Responsibility	Activity Descriptions	Week Beginning
013-2	The Board of Education receives the position classifications and starts the approval process. All position classifications that must be approved by the Civil Service Commission are prepared for submittal.	Oct 27
014-3	The first major assignment of the I. E. C. will be to review the educational program alternatives developed furing the Workshop sessions and decide which of these should be included in the first year of school. These final decisions must be made by the end of December 1969.	Oct 27
015-1	The Board of Education submits necessary position classifications to the Civil Service Commission for approval.	
016-4	Special Projects, I. E. C., and GLC meet monthly beginning the first week of November to review the status and monitor the progress of the implementation network.	Nov 3
017-3	The second major function of the I. E. C. will be to prepare information about the Committee's work for dissemination to the community. For example, the I. E. C. will be asked to recommend the supplementary programs to Special Projects for funding directly out of the budget allocated to the First Facility.	Nov 3
018-4	The Special Projects Division will lend support to the I. E. C. in preparing the information to be disseminated to the community.	Nov 3
019-3	The I. E. C. will disseminate this information to the community.	Nov 10
020-7	GLC completes materials that comprise a package of recruitment materials, as set forth in the Organization/Staffing Plan (Volume II, Section 2). A form called a "profile sheet" will be used to plan each staff member's staff training development activities.	Nov 10

Activity/ Responsibility	Activity Descriptions	Week Beginning
021-7	GLC submits the package of recruitment materials to the Special Projects Division.	Nov 10
022-4	Special Projects reviews the materials in the recruiting package and makes modifications. This material should be reviewed simultaneously with the Organization/Staffing Plan in order to clearly relate the forms in the recruiting package to particular tasks within the Plan.	Nov 10
023-4	Special Projects submits the materials in the recruitment package and the needed recruitment procedures to the Personnel Subcommittee of the I. E. C. for review and assembly to prepare the Subcommittee to serve as a support source in the recruiting process.	Nov 17
024-7	The Equipment and Supplies list for the Phase I Staff Development program to be conducted during July and August of 1970 will be completed by GLC.	Nov 17
025-7	GLC submits the Equipment and Supplies list for the Staff Development Program to Special Projects.	Nov 17
026-4	Special Projects receives the Equipment and Supplies list from GLC for review and approval.	Nov 17
027-8	GLC completes Student Registration Procedures and the form design for registration following the design set forth in the Operations Plan, Volume II, Section 3.	
028-8	GLC submits the Student Registration Procedures and the registration form design to Special Projects.	Nov 17

Activity/ Responsibility	Activity Descriptions	Week Beginning
029-4	Special Projects receives the Student Registration Procedures and the registration form design for review and modification.	Nov 17
030-4	Special Projects submits the Equipment and Supplies List for purchase for Phase I Staff Development program to the Curriculum Subcommittee of the I. E. C.	Nov 24
031-3	The Curriculum Subcommittee of the I. E. C. reviews the Equipment and Supplies List for the Phase I Staff Development program.	Nov 24
032-3	The Curriculum Subcommittee of the I. E. C. forwards its review completion notice on the Equipment and Supplies List to Special Projects.	Nov 24
033-1	Position classifications and salaries for these positions which were prepared by GLC will be approved by the Board of Education by the latter part of the week.	Nov 24
034-4	A recruitment team composed of two people from GLC begins the recruitment phase by organizing and reviewing the staff selection criteria and recruiting procedures (See Recruitment Plan in the Staff Development section of Volume II.)	Dec 1
035-4	Special Projects, I. E. C., and GLC meet to review the status and monitor the progress of the implementation network.	Dec 1
036-4	Special Projects forwards information concerning the beginning of staff recruitment for the First Facility to the Personnel Subcommittee of the I. E. C. so that plans for their involvement in the recruiting process can begin (See Recruitment in Section 2 of Volume II.)	Dec 1

Activity/ Responsibility	Activity Descriptions	Week Beginning
037-4	The recruiting team advertises First Facility staff positions, placing heavy emphasis on advertising the position for Training Director and the position for Office Manager. Due to the unavoidably short time allotted to the total recruiting, interviewing, certification, and appointment process, the positions for Training Director and Office Manager may be sought within the D. C. School System. This may prove to be a rather expedient process since the role descriptions designed by GLC for these two positions are almost identical to existing position classifications on file with the Board of Education. The primary drawback would be the lack of extensive interviewing, i. e., lack of time to adequately consider a number of prospects outside the D. C. School System.	Dec 8
038-3	The Personnel Subcommittee of the I. E. C. submits a list of preliminary contacts for prospective staff to Special Projects.	Dec 8
039-8	GLC completes the Operational Procedures Manual which contains the purchasing and budgetary procedures based on the Operations Plan, Volume II, Section 3.	Dec 8
040-8	GLC submits the Operational Procedures Manual to Special Projects.	Dec 8
041-4	Special Projects receives the Operational Procedures Manual from GLC for review and modification.	Dec 8
042-4	Special Projects places the order for equipment and supplies for Phase I Staff Development Program.	Dec 15
043-8	GLC completes the Fiscal Accounting Procedures based on the design of the Operations Plan, Volume II, Section 3.	Dec 15

Activity/ Responsibility	Activity Descriptions	Week Beginning
044-8	GLC submits the Fiscal Accounting Procedures to Special Projects.	Dec 15
045-8	Special Projects receives the Fiscal Accounting Procedures from GLC for review and modifications.	Dec 15
046-3	The I. E. C. selects program alternatives which they started to review in October 1969. The Cost Model containing the Community Participation Budget and developed by GLC will be reviewed by Special Projects and the I. E. C. for the purpose of determining selected program costs.	Dec 15
047-7	The recruiting team from GLC and the Special Projects Division prepare an interview schedule based on the preliminary list of contacts from the Personnel Subcommittee of the I. E. C. and all interview requests received.	Dec 22
048-7	GLC submits the interview schedule to the Personnel Subcommittee of the I. E. C. (See Recruitment in Section 2 of Volume II.)	Dec 22

Activity/ Responsibility	Activity Descriptions	Week Beginning
049-4	The recruiting team from GLC and Special Projects conducts interviews of prospective First Facility staff and pays particular attention to filling the positions of Training Director and Office Manager.	Jan 5, 1970
050-3	The Personnel Subcommittee of the I. E. C. aids the recruiting team from GLC and Special Projects in the interview process by looking for and approving human characteristics in prospective First Facility staff members.	Jan 5
051-11	GLC completes the Equipment and Furnishings List based on the design of the Facilities Plan, Volume III, Section 5.	Jan 5
052-11	GLC submits the Equipment and Furnishings List for purchase to Special Projects.	Jan 5
053-4	Special Projects receives the Equipment and Furnishings List for final review (see introductory statement before code number 001-4).	Jan 5
	The D. C. Schools Budget Office approved the Equipment and Furnishings List during the last week of September when the Supplemental Budget for FY '70 was prepared and submitted to the D. C. Government.	
054-4	Special Projects submits a formal copy of the Equipment and Furnishings List to the D. C. Schools Budget Office.	Jan 5
055-6	GLC completes the Individualized Materials and other Instructional Materials List based on the design of the Education Plan, Volume I, Section 1.	Jan 5
056-6	GLC submits the Individualized and other Instructional Materials List for purchasing to Special Projects.	Jan 5

Activity/ Responsibility	Activity Descriptions	Week Beginning
057-4	Special Projects receives the Individualized and other Instructional Materials List from GLC.	Jan 5
058-6	GLC completes the Resource Center Materials List based on the design of the Education Plan, Volume I, Section 1.	Jan 5
059-6	GLC submits the Resource Center Materials List for purchase to Special Projects.	Jan 5
060-4	Special Projects receives the Resource Center Materials List from GLC.	Jan 5
061-6	GLC completes the Outline for the Parents' Handbook based on the design of the Education Plan, Volume I, Section 1.	Jan 5
062-6	GLC submits the Outline for the Parents' Handbook to Special Projects. The Handbook will be completed during the Phase I Staff Development program in the summer of 1970 by a committee of First Facility staff and parents.	Jan 5
063-4	Special Projects receives the Outline for Parents' Handbook from GLC.	Jan 5
064-4	Special Projects, I. E. C., and GLC meet to review the status and monitor the progress of the implementation network.	Jan 5
065-1	The D. C. Government submits the District Budget (including First Facility Supplemental for FY '70 and First Facility FY '71) to Congress for approval.	Jan 12
066-0	Congress receives the District Budget. Approval of the Budget can be expected in the Spring of 1970.	Jan 12
067-4	Special Projects forwards the Individualized and other Instructional Materials List to the Curriculum Subcommittee of the I. E. C. for review.	Jan 12

Activity Descriptions

Activity/ Responsibility		Week Beginning
068-3	The Curriculum Subcommittee of the I. E. C. receives the Individualized and other Instructional Materials List for review to determine the completeness of the list.	Jan 12
069-4	Special Projects forwards the Resource Center Materials List to the Curriculum Subcommittee of the I. E. C. for review.	Jan 12
070-3	The Curriculum Subcommittee of the I. E. C. receives the Resource Center Materials List for review to determine completeness of the list.	Jan 12
071-4	Special Projects forwards the Outline for the Parents' Handbook to the Participation Subcommittee of the I. E. C. for review.	Jan 12
072-3	The Participation Subcommittee of the I. E. C. receives the Outline for the Parents' Handbook, reviews it and holds it for completion during the Phase I Staff Development program in the summer of 1970.	Jan 12
073-4	Special Projects forwards the Equipment and Furnishings List to the Administration Subcommittee of the I. E. C. for review.	Jan 12
074-3	The Administration Subcommittee of the I. E. C. receives the Equipment and Furnishings List containing items such as partitions and carrels that will be purchased for the First Facility.	Jan 12
075-3	The Curriculum Subcommittee of the I. E. C. informs Special Projects that its review of the Individualized and other Instructional Materials List for purchase is complete.	Jan 19
076-4	Special Projects places the order for all instructional materials. The order for individualized materials starts negotiations with Robert Scalon of Research for Better Schools in Pittsburgh.	Jan 19

Activity/ Responsibility	Activity Descriptions	Week Beginning
077-3	The Curriculum Subcommittee of the I. E. C. informs Special Projects that their review of the list for purchase for the Resource Center is complete.	Jan 19
078-4	Special Projects places the order for library books for the Resource Center through the central library unit of the D. C. schools.	Jan 19
079-3	The Administration Subcommittee of the I. E. C. informs Special Projects that its review of the Equipment and Furnishings List for purchase is complete.	Jan 19
080-4	Special Projects places the order for the Equipment and Furnishings for the First Facility to be received the first of August 1970.	Jan 19
081-8	GLC completes the list for submittal to Special Projects of all periodic operating reports to be submitted to the Board of Education and outside agents.	Jan 26
082-8	GLC submits the list to Special Projects of all periodic operating reports to be submitted to the Board of Education and outside agents.	Jan 26
083-4	Special Projects receives the list of all periodic operating reports to be submitted to the Board of Education and outside agents from GLC.	Jan 26
084-4	Special Projects, I. E. C., and GLC meet to review the status and monitor the progress of the implementation network.	Feb 2
085-8	GLC completes Student Attendance-Keeping Procedures based on the design of the Operations Plan, Volume II, Section 3.	Feb 2
086-8	GLC submits the Student Attendance-Keeping Procedures to Special Projects.	Feb 2
087-4	Special Projects receives the Student Attendance-Keeping Procedures from GLC to be used in the training program during the summer of 1970.	Feb 2

Activity/ Responsibility	Activity Descriptions	Week Beginning
088-4	Special Projects begins target area identification of prospective First Facility pupils.	Feb 2
090-4	Special Projects prepares relocation materials for prospective staff who live outside D. C. Metropolitan Area.	Feb 9
091-3	I. E. C. aids Special Projects in the preparation of relocation materials for prospective staff who live outside the D. C. Metropolitan Area.	Feb 9
092-4	Special Projects disseminates relocation materials to prospective staff who live outside the D. C. Metropolitan Area.	Feb 16
093-4	The recruitment team and Special Projects complete interviews for a Training Director and Office Manager. Recruitment, interviews, and screening continues for the remainder of the First Facility staff.	Feb 16
094-4	Special Projects submits the applications and credentials, if necessary, to the Board of Examiners for certification and appointment	Feb 16
095-2	The Board of Examiners receives the applications and credentials of the prospective Training Director and Office Manager. The Board of Examiners may wish to interview the prospects.	Feb 16
096-2	The Board of Examiners completes the certification and appointment of the Training Director and Office Manager and informs Special Projects that the prospects have been certified and appointed.	Feb 23
097-4	Special Projects informs the Personnel Subcommittee of the I. E. C and the prospects that the Board of Examiners has approved the positions through certification and appointment.	Feb 23

Activity/ Responsibility	Activity Descriptions	Week Beginning
098-4	The Training Director and Office Manager come on board to begin planning the Phase I Staff Development program. The planning phase will run for four months with the total training staff on board by May 4, 1970.	March 2
099-6	GLC completes design models for Student Record forms based on the design of the Education Plan, Volume I, Section 1.	March 2
100-6	GLC submits the design models for Student Record forms to Special Projects for use in the Phase I Staff Development by the staff.	March 2
101-4	Special Projects receives the design models record forms from GLC.	March 2
102-4	Special Projects guides the Training Director and Office Manager in the review of the Staff Development program, the Operational Procedures Manual, Student Registration Procedures, Fiscal Procedures, and in the use of design model forms submitted by GLC.	March 2
103-4	Special Projects, I E. C., and GLC meet to review the status of and monitor the progress of the implementation network.	March 2
104-2	The D. C. Schools Budget Office submits the FY '72 "budget call" to Special Projects.	March 30
105-4	Special Projects receives the FY '72 "budget call" to begin preparation of the Budget Request.	March 30
106-4	Special Projects informs the I. E. C. of the "budget call" so that I. E. C. can begin preparation of community budget inputs.	March 30
107-4	Special Projects, I. E. C., and GLC meet to review the status and monitor the progress of the implementation network.	April 6

Activity/ Responsibility	Activity Descriptions	Week Beginning
108-4	The recruiting team and Special Projects complete interviews for the remainder of the training staff. Recruitment, interviews, and screening continue for the remainder of the First Facility staff.	April 6
109-4	Special Projects submits the applications and credentials, if necessary, to the Board of Examiners for certification and appointment.	April 6
110-2	The Board of Examiners receives the applications and credentials of the prospective training staff for Phase I Staff Development. The Board of Examiners may wish to interview these persons.	April 6
111-4	Special Projects identifies the 700 students for the First Facility.	April 20
112-3	The Participation Subcommittee of the I. E. C. aids in the identification of the 700 students for the First Facility.	April 20
113-4	Special Projects contacts the parents of the identified First Facility students to inform them of the educational design of the First Facility and solicit their support.	April 27
114-3	The Participation Subcommittee of the I. E. C aids Special Projects in contacting parents of the First Facility students identified.	April 27
115-2	The Board of Examiners completes the certification and appointment of the remainder of the training staff and informs Special Projects that the prospects have been certified and appointed.	April 27
116-4	Special Projects informs the Personnel Subcommittee of the I. E. C. and the new training staff that the Board of Examiners has completed certification and appointment.	April 27

Activity/ Responsibility	Activity Descriptions	Week Beginning
117-4	Special Projects reproduces the design models for Student Record Forms for use in the Phase I Staff Development program.	April 27
118-4	Special Projects starts the registration of First Facility students as outlined in the Student Registration Procedures submitted by GLC in November 1969.	April 27
119-4	Special Projects starts to secure facilities for the total training staff for two months.	April 27
120-4	The training staff comes on board to begin the last half of planning for Phase I Staff Development (see Staff Development Volume II, Section 2).	May 4
121-4	Special Projects completes securing facilities for the total training staff for two months.	May 4
122-4	Special Projects, the Training Director, and the Office Manager guide the training staff in a review of the education program and the objectives of the Phase I Staff Development program. This review will include gaining familiarity with the purposes and use of the Student Registration Procedures, Operational Procedures Manual, Fiscal Accounting Procedures, Student Forms, and the Facilities Utilization Manual.	May 4
123-4	Special Projects, I. E. C., and GLC meet to review and monitor the progress of the implementation network.	May 4
124-4	Special Projects and the training staff begin checking preliminary profiles established during recruitment for the purpose of determining specialized resources within the prospective staff. These specialized resource people will be	May 11

Activity/ Responsibility	Activity Descriptions	Week Beginning
	asked to assume training responsibilities among their peers, e. g., the Multimedia Resource Coordinator should be able to work with the staff on the use of available audiovisual equipment and materials.	
125-4	Special Projects and the training staff complete check of preliminary profiles established during recruitment.	May 18
126-4	Special Projects begins to seek food and transportation agents for the First Facility, and informs the I. E. C. of this activity.	May 18
127-4	The I. E. C. provides support in the search for food and transportation agents.	May 18
128-4	Special Projects submits a list of the identified First Facility students to the Participation Subcommittee of the I. E. C. to receive their support in the selection of pupils for the Phase I Staff Development program.	May 18
129-4	The recruiting team and Special Projects complete interviews for the First Facility staff.	May 18
130-4	Special Projects submits the applications and credentials, where necessary, to the Board of Examiner for certification and appointment.	May 18
131-2	The Board of Examiners receives the applications and credentials of the prospective First Facility staff. The Board of Examiners may wish to interview the prospects.	May 18
132-4	Special Projects begins selection of a training site for Phase I Staff Development.	May 25

Activity/ Responsibility	Activity Descriptions	Week Beginning
133-3	The Administration Subcommittee of the I. E. C. provides support in the selection of a training site for Phase I Staff Development.	May 25
134-4	Special Projects begins selection of storage places for First Facility supplies and materials on order.	May 25
135-3	The Administration Subcommittee of the I. E. C. provides support in the selection of storage facilities for First Facility supplies and materials on order.	May 25
136-3	The Participation Subcommittee of the I. E. C. begins selection of the community people who will participate in the Phase I Staff Development program.	May 25
137-4	Special Projects and the training staff request the test results of the 700 First Facility students from the annual spring testing administered by the Public Schools.	May 25
138-2	D. C. Schools receive the request for the test results and begin preparation of information for submittal to Special Projects.	May 25
139-4	Special Projects and the training staff begin review of registration information on the new students and collected data on the transfer students.	May 25
140-4	Special Projects, I. E. C., and GLC meet to review and monitor the progress of the implementation network.	June 1
141-4	Special Projects and the Administration Subcommittee of the I. E. C. select a training site for Phase I Staff Development.	June 1
142-4	Special Projects and the Administration Subcommittee of the I. E. C. select storage facilities for First Facility supplies and materials.	June 1

Activity/ Responsibility	Activity Descriptions	Week Beginning
143-2	The D. C. Schools submit test results of the 700 First Facility students to Special Projects.	June 8
144-4	Special Projects and the training staff receive the test results from the D. C. Schools and begin to review the results.	June 8
145-3	The Participation Subcommittee of the I. E. C. selects the community people who will participate in the training program.	June 8
146-2	The Board of Examiners completes the certification and appointment of the First Facility staff and informs Special Projects that the prospects have been certified and appointed.	June 8
147-4	Special Projects informs the Personnel Subcommittee and the new First Facility staff that certification and appointment are complete.	June 8
148-4	Special Projects receives the individualized and other instructional materials and stores them at the training site.	June 15
149-4	Special Projects receives the training equipment and supplies for the training program and stores them at the training site.	June 15
150-4	Special Projects and the training staff contact all specialized resource staff to enlist its aid in assuming training responsibilities among their peers.	June 15
151-4	Special Projects makes final check on all staff that must relocate to the D. C. Metropolitan area.	June 15
152-3	The Personnel Subcommittee of the I. E. C. provides support in the final check of all staff that must relocate to the D. C. Metropolitan area.	June 15

Activity/ Responsibility	Activity Descriptions	Week Beginnin
153-4	Special Projects and I. E. C. select food and transportation agents for the First Facility.	June 22
154-4	Special Projects and the training staff complete the planning phase of Phase I Staff Development.	June 29
155-4	The total First Facility staff comes on board for the start of Phase I Staff Development.	July 6
156-4	Special Projects begins Phase I Staff Development.	July 6
157-4	Special Projects, I. E. C., and GLC meet to review and monitor the progress of the implementation network.	July 6
158-3	The I. E. C. provides support to Special Projects at the beginning of Phase I Staff Development. This support will be available throughout the training program.	July 6
159-4	Special Projects and the training staff guide the review of the Staff Development program and the procedures, manuals, outlines, and education program for the First Facility.	July 6
160-4	Special Projects and training staff guide the selection of a committee of parents and staff for the completion of the Parents' Handbook based on the outline submitted by GLC during January 1970.	July 13
161-4	Phase I Staff Development continues with training content (see Staff Development Volume II, Section 2) with directions from the training staff.	July 20
162-3	The I. E. C. prepares to distribute information concerning the election of the permanent Board to the FLNT community.	July 20

Activity/ Responsibility	Activity Descriptions	Week Beginning
163-4	Special Projects specifies the transportation and food service needs of the First Facility.	July 27
164-4	The staff begins to prepare a building and maintenance supplies list for the First Facility.	July 27
165-4	The staff begins to assign students to stages and teachers.	July 27
166-4	The staff begins to assign stage representatives for the First Facility.	July 27
167-4	The staff begins to assign responsibility for preparation of all formal reports required by the First Facility up to December 1970.	July 27
168-4	The staff begins to assign responsibility for building and maintenance tasks.	July 27
169-4	The staff begins to modify budget, purchasing, accounting, and student attendance procedures to be used in the operation of the First Facility.	July 27
170-3	The I. E. C. disseminates information to the community concerning the election of the permanent Board.	July 27
171-4	Special Projects, I. E. C , and GLC meet to review and monitor the progress of the implementation network.	August 3
172-4	Staff completes modification of budget, purchasing, accounting, and student attendance procedures to be used in the First Facility.	August 3
173-4	The staff completes assigning responsibility for building and maintenance tasks.	August 3
174-4	The staff completes assigning responsibility for preparation of all formal reports required by the First Facility up to December 1970.	August 3

Activity/ Responsibility	Activity Descriptions	Week Beginning
175-5	The staff completes assigning students to stages and teachers for September 1970.	August 3
176-4	The staff completes the Building and Maintenance Supplies List for the First Facility.	August 3
177-3	The I. E. C. begins preparation for election of the permanent Board by developing criteria for selection of prospective Board members.	August 3
178-4	Special Projects completes the food services plan for the First Facility.	August 10
179-4	Special Projects submits the food service plan to the I. E. C	August 10
180-3	The I. E. C. receives the food service plan for dissemination to the community.	August 10
181-4	The staff begins to allocate funds from the final Budget for the establishment of an account book.	August 10
182-4	Special Projects receives the Resource Center library books which are already catalogued from the D. C. schools' central library staff.	August 10
183-4	The appropriate staff people (see role descriptions in Staff Development Volume II, Section 2) organize the Resource Center books at the training site.	August 10
184-4	Special Projects reproduces all forms required for budget, accounting, purchasing, instructional, and student attendance procedures for operations beginning September 1970.	August 10
185-4	The staff completes establishment of the account book for operational use beginning September 1970.	August 17

Activity/ Responsibility	Activity Descriptions	Week Beginning
186-3	The I. E. C. disseminates criteria for selection of Board members to prospective members.	August 17
187-4	The training staff distributes to appropriate staff all forms, procedures, and supply lists for accounting, budgeting, and purchasing.	August 24
188-4	The staff begins planning in-service training (Phase II Staff Development).	August 24
189-4	List of local college and university resources for the in-service training program is prepared by training staff.	August 24
190-4	The staff completes in-service training plans for operational phase of First Facility.	August 24
191-4	Selected committee of staff and parents complete the Parents' Handbook.	August 24
192-4	Phase I Staff Development complete.	August 24
193-4	Special Projects completes the registration of all First Facility students.	August 31
194-4	D. C. schools receives the equipment and furnishings for the First Facility for installment.	August 31
195-2	The First Facility is ready for operations.	August 31
196-2	School starts.	Sept 7
197-4	Special Projects, I. E. C., and GLC meet to review and monitor the progress of the implementation network.	Sept 7
198-3	The I. E. C. provides orientation and operation support to the FLNT administrators during opening of school. This support continues throughout the year.	Sept 7

Activity Descriptions

Activity/ Responsibility		Week Beginning
199-5	Fort Lincoln School administrators are those staff people providing operational and administrative support in addition to their instructional functions. (See role descriptions in Staff Development, Volume II, Section 2.)	Sept 7
200-3	The I. E. C. distributes information concerning the permanent Board elections and seeks petitions from prospective candidates for the Board.	Sept 7
201-3	The Participation Subcommittee of the I. E. C. prepares information concerning the First Facility for dissemination to the FLNT community.	Sept 7
202-5	The staff begins diagnostic testing and observations to determine student interest/behavioral characteristics.	Sept 14
203-5	The staff distributes the Parent's Handbook in school for students to take home to parents.	Sept 14
204-3	The I. E. C. submits its recommendations for the election process to the Board of Education for approval.	Sept 14
205-2	The Board of Education receives the recommendations for the election process from the I. E. C.	Sept 21
206-2	The Board of Education approves the election process for Board elections and informs the I. E. C. of its decisions.	Oct 5
207-3	The I. E. C. announces candidates for the Board to the community.	Oct 5
208-5	The staff representatives, I. E. C., and GLC meet to review and monitor the progress of the implementation network.	Oct 5
209-5	The staff completes the diagnostic testing and observation of students which started during week of September 14.	Oct 5

Activity Descriptions

Activity/ Responsibility		Week Beginning
210-5	The administrators distribute budget forms and procedures to appropriate staff for review.	Oct 5
211-5	The administrators begin preparation of the monthly accounting report to be submitted to the D. C. Finance Office for the purpose of monitoring and debugging operational procedures.	Oct 5
212-2	The D. C. school Budget Office submits the FY '72 Budget to the D. C. Government.	Oct 12
213-1	The D. C. Government receives the FY '72 School Budget from the D. C. school Budget Office.	Oct 12
214-3	The I. E. C. informs prospective Board members campaigning can begin.	Oct 12
215-5	The administrators complete and submit the monthly accounting report to be submitted to the D. C. Finance Office.	Oct 12
216-2	The D. C. Finance Office receives the monthly accounting report for review and acceptance.	Oct 12
217-5	The administrators begin assessment of accounting procedures with the D. C. Finance Office.	Oct 12
218-2	The D. C. Finance Office provides assistance in the assessment of accounting procedures for the First Facility.	Oct 12
219-5	The staff begins parent-teacher conferences to be conducted over a 4-6 week period in a manner that ensures that a conference is held for each of the 700 students: • The 23 advisors will hold 700 conferences;	Oct 12

Activity/ Responsibility	Activity Descriptions	Week Beginning
	• Each of the 18 teachers will hold 35 conferences, involving 630 of the students; • Each of the 5 administrators will hold 5 conferences involving 70 of the students.	
220-5	FLNT staff representatives, I. E. C., and GLC meet to review and monitor the progress of the implementation network.	Nov 5
221-3	Campaigning for Board election ends and the election begins. The community also votes on the type of Board it would like to see formed	Nov 5
222-5	The administrators begin preparation of the monthly accounting report to be submitted to the D. C. Finance Office.	Nov 5
223-5	The administrators complete and submit the monthly accounting report to the D. C. Finance Office.	Nov 12
224-2	The D. C. Finance Office receives the monthly accounting report for review.	Nov 12
225-3	The I. E. C. informs community of election results.	Nov 12
226-3	The I. E. C. prepares for transitions of the new Board (see Community Participation, Volume II, Section 4).	Nov 19
227-5	The staff completes parent-teacher conferences.	Nov 19
228-5	The staff representatives, I. E. C., and GLC meet to review and monitor the progress of the implementation network.	Dec 7
229-5	Administrators begin preparation of the monthly accounting report to be submitted to the D. C. Finance Office.	Dec 7

Activity/ Responsibility	Activity Descriptions	Week Beginning
230-5	Administrators complete and submit the monthly accounting report to the D. C. Finance Office.	Dec 14
231-2	The D. C. Finance Office receives the monthly accounting report for review.	Dec 14
232-3	The new Board is installed.	Dec 14
233-5	The first quarter of the First Facility is completed.	Dec 14